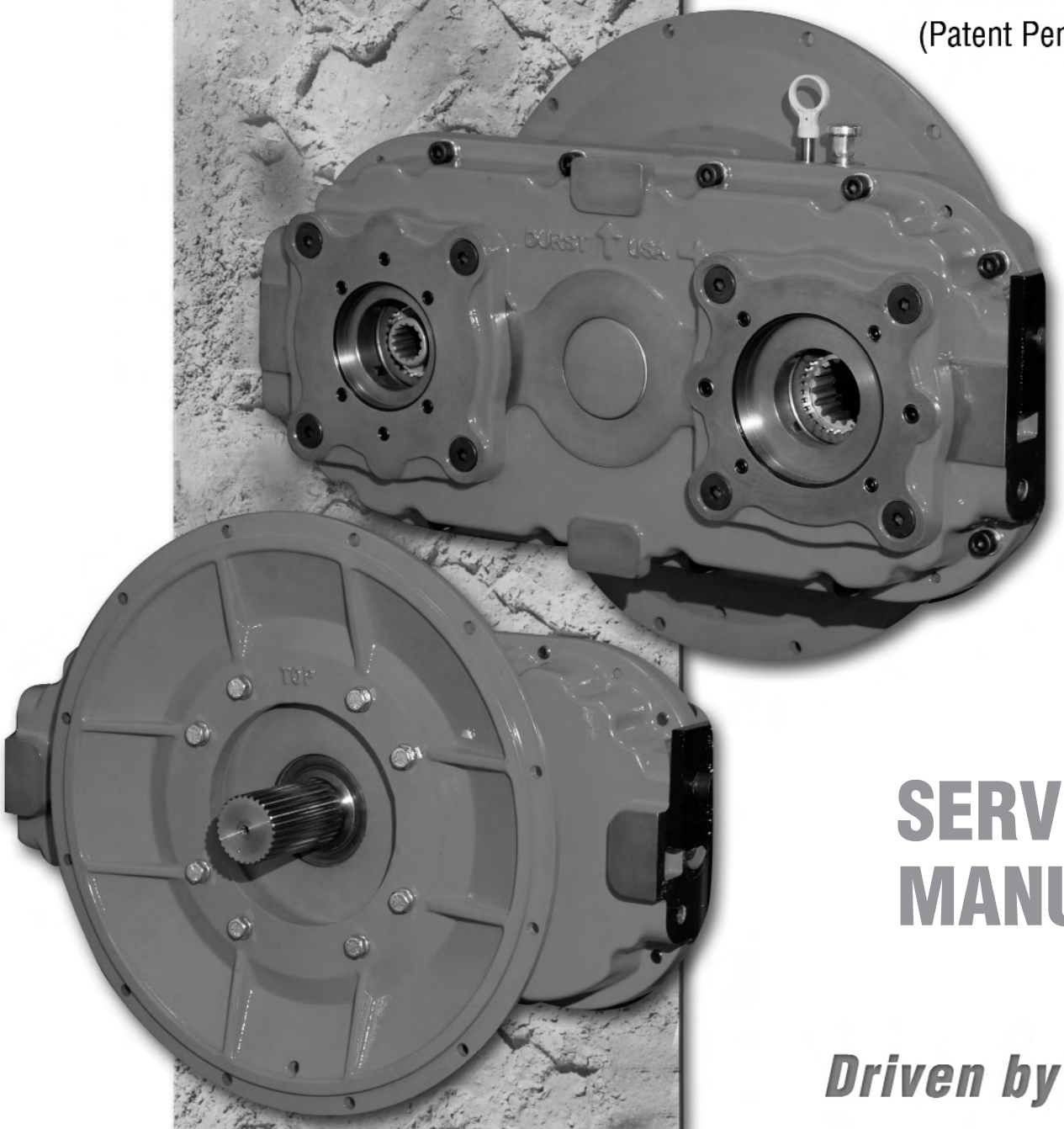
DURST

Next Generation

HYDRAULIC PUMP DRIVES

(Patent Pending)



SERVICE MANUAL

Driven by DURST

TABLE OF CONTENTS

WARNINGS AND CAUTIONS 1

MODEL IDENTIFICATION

Nomenclature for Clutch Assemblies 2
Nomenclature for Drive Plate Assemblies 3
Nomenclature for Independent Input Assemblies 4

INSTALLATION INSTRUCTIONS

Clutch Driven 6
Drive Plate Driven 6
Independent Shaft Driven 6
Mounting Procedure for Durst Pump Drives 7
Installing Hydraulic Pumps to Durst Pump Drives 7

REPAIR AND REBUILDING INSTRUCTIONS

Disassembly Instructions 8-9
Reassembly Instructions 10-11

LUBRICATION AND OIL

Oil Filling Instructions 12
Oil Capacity for 6 Inch Gear Centers 13
Oil Capacity for 8 Inch Gear Centers 14
Oil Capacity for 9 Inch Gear Centers 14
Oil Capacity for 10.5 Inch Gear Centers 15
Oil Capacity for 11.3 Inch Gear Centers 15

PART NUMBER CHARTS

1PD06 Module Pump Drive 16
2PD06 Module Pump Drive 17
3PD06 Module Pump Drive 18
2PD08 Module Pump Drive 19
3PD08 Module Pump Drive 20
4PD08 Module Pump Drive 21
4PD09 Module Pump Drive 22
2PD10 Module Pump Drive 23
3PD10 Module Pump Drive 24
4PD11 Module Pump Drive 25
Pump Spline Adapter 26
Pump Pad Adapter 27
Input Shaft Options 28
Clutch Housings and Engine Adapters 29
Drive Plate Options 30
Clutch Options 31-32

GENERAL INFORMATION

Tools Needed 33
Definitions 33
Tables 33

WARRANTY 34

WARNING

IMPORTANT INFORMATION

CAUTION

Please Read Carefully

Upon receipt of product, immediately inspect for any indication of rough handling or damage in transit. This includes but is not limited to: scuffed paint, broken or damaged containers, broken or cracked housings, bent shafts, metal deformation, or shift in alignment of components. Any evidence of damage or missing parts should be reported immediately to the carrier and a claim entered.

CAUTION
DO NOT
OPERATE

All units are shipped without oil! DO NOT OPERATE until unit has been filled to the proper level with the specified oil grade. Failure will occur if bearings and gears are not properly lubricated. Refer to Lubrication and Oil Filling Instructions.

The following WARNING and CAUTION information is supplied to the Buyer for their protection and to provide the Buyer with years of trouble free and safe operation of your REGAL-BELOIT CORPORATION product.

Read ALL instructions prior to operating pump drive. Injury to personnel or pump drive failure may be caused by improper installation, maintenance or operation.

WARNING

- Written authorization from REGAL-BELOIT CORPORATION or its divisions/subsidiaries is required to operate or use pump drives in man lift or people moving devices.
- Check to make certain application does not exceed the allowable load capacities published in the current catalog.
- Buyer shall be solely responsible for determining the adequacy of the product for any and all uses to which Buyer shall apply the product. The application by Buyer shall not be subject to any implied warranty of fitness for particular purpose.
- For safety, Buyer or user should provide protective guards over all shaft extensions and any moving apparatus mounted thereon. The user is responsible for checking all applicable safety codes in their area and providing suitable guards. Failure to do so may result in bodily injury and/or damage to equipment.
- Hot oil can cause severe burns. Use extreme care when removing lubrication plugs and vents.
- Make certain that the power supply is disconnected before attempting to service or remove any components. Lockout the power supply and tag it to prevent unexpected application of power.
- **TORSIONAL VIBRATIONS**, emanating from many modern diesel engines, can cause severe damage to power train components, resulting in premature failure. To insure the integrity of the power transmission system, a torsional vibration analysis should be performed and suitable vibration dampening components utilized, when indicated by the analysis. Durst is not responsible for damage or failure resulting from diesel engine generated torsional vibrations.

CAUTION

- Lifting supports including eyebolts are to be used for vertically lifting the gearbox only and no other associated attachments or motors.
- If the pump drive cannot be located in a clear and dry area with access to adequate cooling air supply, precautions must be taken to avoid the ingestion of contaminates such as water, and the reduction in cooling ability due to exterior contaminates.
- Mounting bolts should be routinely checked to ensure that the unit is firmly anchored for proper operation. Refer to Table 1 for proper torque specifications when tightening bolts.

In the event of the resale of any of the goods, in whatever form, Resellers/Buyers will include the following language in a conspicuous place and in a conspicuous manner in a written agreement covering such sale:

> The manufacturer makes no warranties or representations, express or implied, by operation of law or otherwise, as to the merchantability or fitness for a particular purpose of the goods sold hereunder. Buyer acknowledges that it alone has determined that the goods purchased hereunder will suitably meet the requirements of their intended use. In no event will the manufacturer be liable for consequential, incidental or other damages. Even if the repair or replacement remedy shall be deemed to have failed of its essential purpose under Section 2-719 of the Uniform Commercial Code, the manufacturer shall have no liability to Buyer for consequential damages.

Resellers/Buyers agree to also include this entire document including the warnings and cautions above in a conspicuous place and in a conspicuous manner in writing to instruct users on the safe usage of the product.

This information should be read together with all other printed information supplied by Durst.

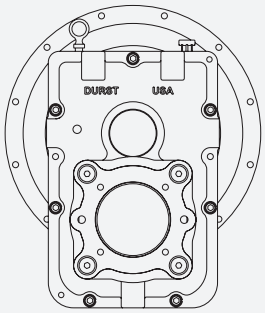
MODEL IDENTIFICATION

A Durst name plate is mounted on every pump drive that is assembled at the factory. This nameplate provides the part number, the ratio and basic description, unit serial number, date unit was assembled, and recommended oil type. Do not paint over, remove, or tamper with the name-plate, as this is the only type of identification for warranty repairs or replacement parts.

If the Durst name plate has been destroyed the following charts can be used to determine the model description.

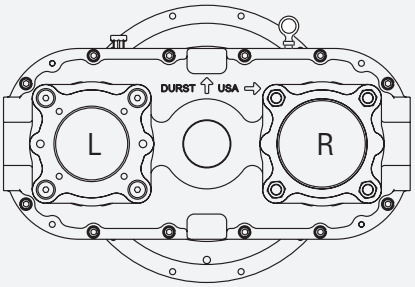
NOMENCLATURE FOR CLUTCH ASSEMBLIES

1PD06



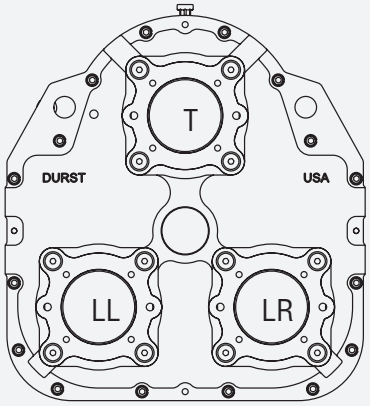
1PD06 1.32I 343-CCH-LS

2PD06, 2PD08, 2PD10



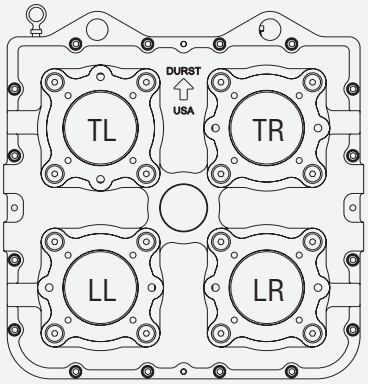
2PD08 1.40D 343-CCH-DDH-RS
L R

3PD06, 3PD08, 3PD10



3PD06 1.29I 223-CCH-CCH-CCH-NS
T LL LR

4PD08, 4PD09, 4PD11



4PD08 1:1 111-CCV-CCH-CCH-CCH-LS
TL TR LL LR

2PD06 1.32 D 3 4 3 - C C H - C C H - L S

Model

Ratio

I = Increaser
D = Decreaser

CLUTCH HOUSING
1 = SAE #1
2 = SAE #2
3 = SAE #3

CLUTCH STAND-OFF
1 = SP214 .....1.00 in.
2 = SP211 .....1.56 in.
3 = Not Available
4 = C111.....1.56 in.
5 = C110.....2.12 in.

PILOT BEARING
1 = 3.94 Dia. (for SP214)
2 = 3.15 Dia. (for SP214)
3 = 2.83 Dia. (all others)

S = Standard Assy.
N = Non-Standard
V = Vertical / Inverted
X = Special

L = Dipstick on Left Side
R = Dipstick on Right Side
N = No Dipstick

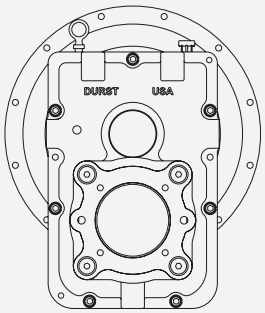
H = Pad Mounted Horizontally
V = Pad Mounted Vertically

PUMP PAD OPTIONS
A = SAE A
B = SAE B
C = SAE C
D = SAE D
D2 = SAE D (2 bolt)
E = SAE E
F = SAE F

PUMP SPLINE ADAPTER
A = SAE A, 9T-16/32
B = SAE B, 13T-16/32
BB = SAE BB, 15T-16/32
C = SAE C, 14T-12/24
CC = SAE CC, 17T-12/24
D = SAE D, 13T-8/16
F = SAE F, 15T-8/16
21 = 21T-16/32
23 = 23T-16/32
27 = 27T-16/32

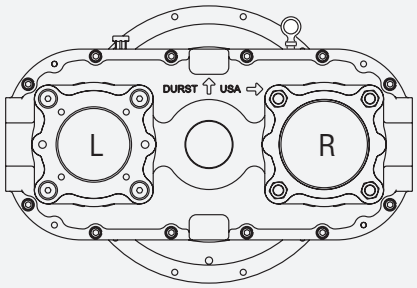
NOMENCLATURE FOR DRIVE PLATE ASSEMBLIES

1PD06



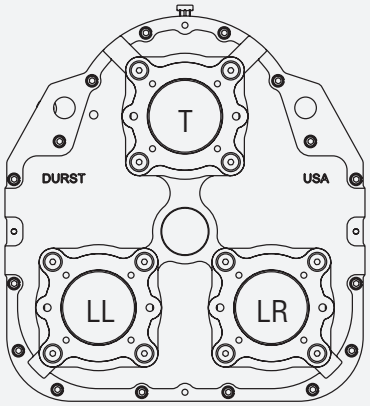
1PD06 1.32I D33-CCH-LS

2PD06, 2PD08, 2PD10



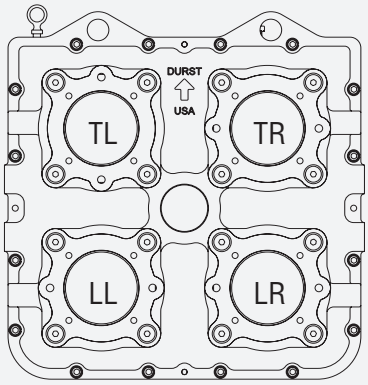
2PD08 1.40D N23-CCH-DDH-RS
L R

3PD06, 3PD08, 3PD10



3PD06 1.29I D22-CCH-CCH-CCH-NS
T LL LR

4PD08, 4PD09, 4PD11



4PD08 1:1 D11-CCV-CCH-CCH-CCH-LS
TL TR LL LR

ENGINE ADAPTER HOUSING
1 = SAE #1
2 = SAE #2
3 = SAE #3
4 = SAE #4

WITH DRIVE PLATE
1 = SAE 14
2 = SAE 11.5
3 = SAE 10
4 = SAE 8

NO DRIVE PLATE
1 = 29T-12/24 Shaft
2 = 20T-10/20 Shaft
3 = 15T-8/16 Shaft
4 = 2.50 Dia. Keyed Shaft
5 = 2.25 Dia. Keyed Shaft

D = With Drive Plate
N = No Drive Plate/ Shaft ONLY

2PD06 1.32 D D 1 1 - C C H - C C H - L S

Model

Ratio

I = Increaser
D = Decreaser

PUMP PAD OPTIONS
A = SAE A
B = SAE B
C = SAE C
D = SAE D
D2 = SAE D (2 bolt)
E = SAE E
F = SAE F

PUMP SPLINE ADAPTER

A = SAE A, 9T-16/32	D = SAE D, 13T-8/16
B = SAE B, 13T-16/32	F = SAE F, 15T-8/16
BB = SAE BB, 15T-16/32	21 = 21T-16/32
C = SAE C, 14T-12/24	23 = 23T-16/32
CC = SAE CC, 17T-12/24	27 = 27T-16/32

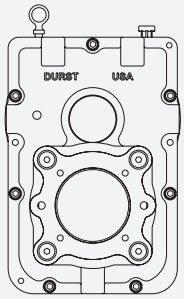
H = Pad Mounted Horizontally
V = Pad Mounted Vertically

L = Dipstick on Left Side
R = Dipstick on Right Side
N = No Dipstick

S = Standard Assy.
N = Non-Standard
V = Vertical / Inverted
X = Special

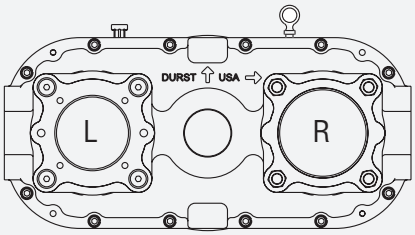
NOMENCLATURE FOR INDEPENDENT INPUT ASSEMBLIES

1PD06



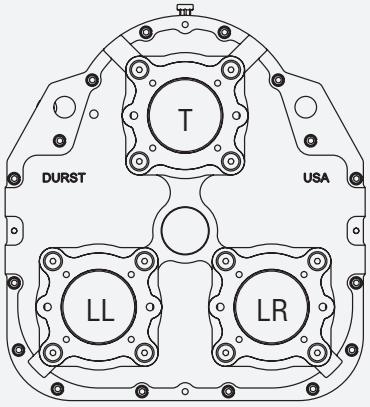
1PD06 1.32I 003-CCH-LS

2PD06, 2PD06, 2PD08, 2PD10



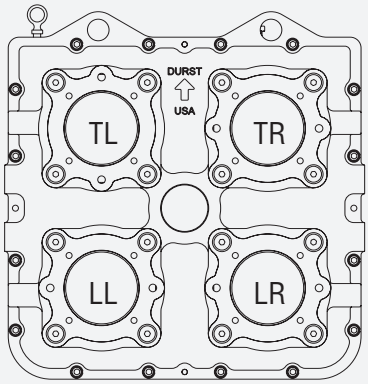
2PD08 1.40D 001-CCH-DDH-RS
L R

3PD06, 3PD08, 3PD10



3PD06 1.29I 002-CCH-CCH-CCH-NS
T LL LR

4PD08, 4PD09, 4PD11



4PD08 1:1 007-CCV-CCH-CCH-CCH-LS
TL TR LL LR

2PD06 1.32 D 003 - C C H - C C H - L S

Model

Ratio

I = Increaser
D = Decreaser

INDEPENDENT INPUT
001 = 1810 Companion
002 = 1610 Companion
003 = 2.50 Dia. Keyed Shaft
004 = 2.25 Dia. Keyed Shaft
005 = 29T-12/24 Shaft
006 = 20T-10/20 Shaft
007 = 15T-8/16 Shaft
008 = Special Shaft

S = Standard Assy.
N = Non-Standard
V = Vertical / Inverted
X = Special

L = Dipstick on Left Side
R = Dipstick on Right Side
N = No Dipstick

H = Pad Mounted Horizontally
V = Pad Mounted Vertically

PUMP PAD OPTIONS
A = SAE A
B = SAE B
C = SAE C
D = SAE D
D2 = SAE D (2 bolt)
E = SAE E
F = SAE F

PUMP SPLINE ADAPTER
A = SAE A, 9T-16/32
B = SAE B, 13T-16/32
BB = SAE BB, 15T-16/32
C = SAE C, 14T-12/24
CC = SAE CC, 17T-12/24
D = SAE D, 13T-8/16
F = SAE F, 15T-8/16
21 = 21T-16/32
23 = 23T-16/32
27 = 27T-16/32

ABOUT YOUR NEW DURST PUMP DRIVE

The New Durst pump drives incorporate some of the features from both the previous Terrell and Hub City designs as well as many new and simplistic features. The Durst pump drive now incorporates class 10 spur gears that run on heavy duty ball bearings. Because ball bearings do not require shimming the assembly of a pump drive is drastically simplified. This also allows for the bearing to be contained within the housing halves. The key feature about this is that any adapter can be changed out without disturbing the gears or bearings in the gear box. This also allows for the box to be split to service gears and bearings without having to remove the adapters.

SPLINES

The Durst pump drives have a 29T-12/24 internal spline on the gears. This allows for a spline adapter to be used on any SAE pump shaft. Because the pump shaft is no longer integral with the gear, if the pump is changed or replaced, a new gear is not required. A 29T-12/24 spline significantly reduces wear on both the gears and spline adapters.

OIL CIRCULATION

Extensive testing was done on each Durst pump drive gear box to optimize the quantity of oil in each box at each ratio. The new Durst pump drives no longer have the need for Iso-Lube ports. Instead the Durst pump drives have special oil port locations and oil directing ribs that causes the oil to flow into the pump pad area, lubricating the spline adapters and bearings without the need for external pumps. Oil volume is critical to make this feature work and the oil level should be checked frequently.

PUMP PADS

The Durst pump pads have been simplified and no longer contain the bearing cup. Pump pads can now be removed without disrupting the internal workings and alignment of the bearings and gears inside the gear box. As mentioned above the Durst pump pads no longer feature the Iso-Lube ports. Oil flows into the pump pad area and then patented cast in recesses causes the oil to flow across the spline for wet spline operation.

INPUT SHAFT

The input shaft of the Durst pump drive is integral with the input gear through a 29T-12/24 spline. The input shaft is contained within the gear box and allows the drive plate or torsional coupling to be free on the input shaft, which reduces misalignment stresses from the engine flywheel and the gear box. Due to the modular design of the gear box the input shaft can be removed and/or replaced without disturbing the internal workings of the gear box.

DRIVE PLATE

The Durst pump drive now uses a four disk drive plate. By using 4 thin disks the drive plate becomes slightly wider and increases the rating. Thin disks are much more flexible and when multiple disks are put together they absorb more engine vibrations than a single thick disk. As mentioned in the Input Shaft section the drive plate is no longer captured on the input shaft, instead it is able to automatically adjust if any engine flywheel misalignment occurs. These changes result in smoother operation and longer gear box life.

INSTALLATION INSTRUCTIONS

INSTALLATION OF DURST PUMP DRIVES

There are 3 types of standard inputs that are available with the Durst pump drive models.

DRIVE PLATE DRIVEN

This unit mounts directly to the engine flywheel. Use extreme care when mounting the drive plate to the engine flywheel to avoid preloading the crankshaft bearings.

1) Install the drive plate onto the engine flywheel, drive plate hub is to face AWAY from the engine. Bolt the drive plate to the engine flywheel, see Table 1 (page 33) for proper torque specifications when tightening bolts.

2) Check drive plate run out. Total TIR should not exceed 0.008".

3) Apply Silver Streak #200S to external splines and slide the input shaft of the pump drive into the drive plate hub splines until the pump drive engine adapter seats completely into the engine flywheel housing. Torque all mounting bolts per Table 1 (see page 33).

INDEPENDENT SHAFT DRIVEN

This unit is designed to be driven with a short coupled drive line connection to the input shaft. The input shaft **WILL NOT accept any overhung loads** (i.e. Belt Sheaves, sprockets, or severely angled drive lines). For over-hung load applications, contact Durst Engineering.

CLUTCH DRIVEN

This unit mounts directly to the engine flywheel through an over center clutch. The clutch is primarily used for disconnecting the pump drive during engine start up. Each clutch includes a separate installation parts and service manual.

1) The clutch is not preset at the factory and can only be adjusted after being mounted to the engine.

2) Check the engine crankshaft endplay prior to installing the clutch driven pump drive.

3) Mount the clutch drive ring to the engine flywheel. Refer to the clutch service manual for the proper bolt torques.

4) Slide the clutch drive plates into the drive ring and pilot bearing into the engine flywheel, until the clutch housing fully seats with the engine flywheel housing. Torque mounting bolts according to Table 1 (see page 33).

⚠CAUTION Do not use the engine adapter mounting bolts to seat the pump drive engine adapter or pump drive clutch housing onto the engine flywheel housing. This may reduce engine crankshaft endplay and may result in premature damage or failure of crankshaft bearings.

Always check engine crankshaft endplay after installing the drive plate or clutch to engine flywheel. Refer to engine manufacturer's endplay specifications.

MOUNTING PROCEDURES FOR DURST PUMP DRIVES

The pump drive is to be supported on a rigid foundation using the mounting holes provided in the pump drive housing. Inadequate mounting foundation may result in misalignment or excessive stress on the pump drive housing. This can cause undue noise, overheating, and possible failure. Durst pump drive gear boxes can be mounted in several positions to be more adaptive to the customer's application.

Note: To prevent loosening and misalignment, bolts must be tightened to the recommended torques specs shown in Table 1 (see page 33).

2PD06, **2PD08**, and **2PD10** pump drives can be mounted horizontally or vertically.★

★ Refer to arrows that are cast into the housings for mounting direction.

1PD06, **3PD06**, **3PD08**, and **3PD10** pump drives can be mounted normal or inverted.

4PD08, **4PD09**, and **4PD11** pump drives can ONLY be mounted in the normal orientation.

CAUTION **Failure to mount boxes in the specified orientations will cause premature failure!**

INSTALLATION OF HYDRAULIC PUMPS TO DURST PUMP DRIVES

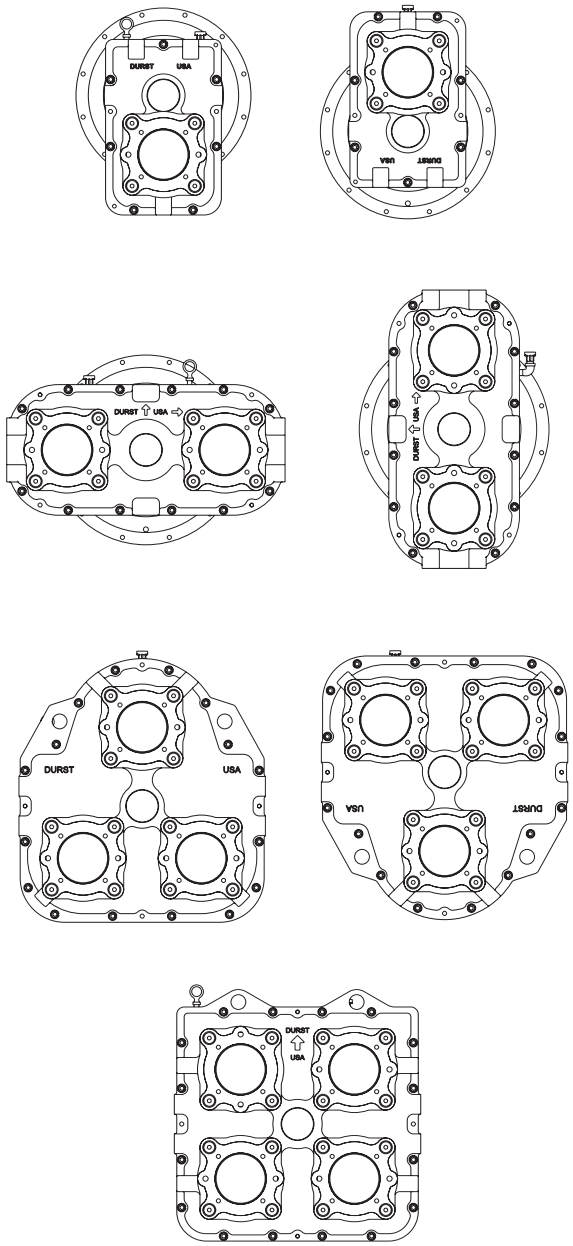
The pump pads on the Durst pump drives offer two or four bolt mountings, which can be mounted vertically or horizontally to provide the customer a wide range of hydraulic pump mounting options.

1) Lubricate the included o-ring with oil and install it onto the hydraulic pump pilot.

CAUTION **Due to an internal oil lubrication system do NOT apply any grease, or spline lubricant as this will contaminate the oil.**

2) Align the splines of the hydraulic pump to the spline adapter. DO NOT use the hydraulic pump mounting bolts to seat the hydraulic pump onto the pump pad. Refer to the hydraulic pump manufactures specification for proper bolt torques.

NOTE: O-rings must be replaced anytime the hydraulic pumps are removed from the gear box.



REPAIR & REBUILDING INSTRUCTIONS

DISASSEMBLY INSTRUCTIONS

1) Make certain that the power supply is disconnected before attempting to service or remove any components. Lockout the power supply and tag it to prevent unexpected application of power.

2) Drain oil while the unit is still warm.

WARNING Hot oil can cause severe burns. Use extreme care when removing lubrication plugs and vents!

3) Properly support the pump drive and remove all retaining bolts from the pump drive engine adapter, then remove all frame mounting bolts.

NOTE: Hydraulic pumps may remain connected, however it is recommended, for ease of disassembly and cleaning parts, that the pumps be removed.

4) If replacing the pump pads, remove the cap screws or nuts. Use a large screwdriver to evenly pry the pump pads loose of the gear box. Be careful to lift the pump pads evenly to avoid damaging the pilot.

CAUTION To avoid oil leaks, all o-rings are to be replaced any time the pump pad is removed.

5) To access the input shaft retaining ring, remove the expansion plug. Remove the retaining ring from the input drive shaft and slide the shaft out of the engine adapter side (see Figure A).

NOTE: The expansion plug must be replaced any time it is removed.

Tip: Use a rubber or wooden mallet to unseat the shaft o-ring from the input gear.

6) Once the input drive shaft is removed, place the pump drive on a flat surface with the pump pads facing up. Remove the two (2) dowel pins and all the cap screws before attempting to separate the housing halves. Use the cap screws in the threaded separating holes to split the housing halves. Slightly tap the output housing with a wooden mallet to release the bearings and gears from the bearing bores (see Figure B).

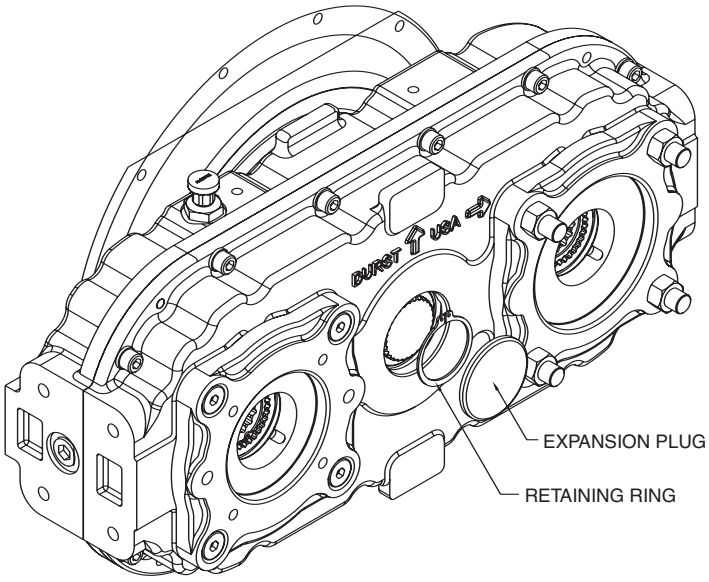


Figure A

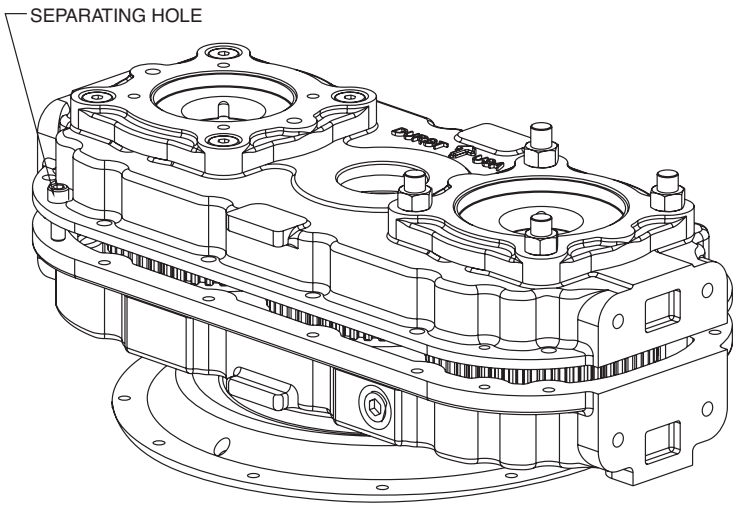


Figure B

7) Evenly lift the output housing half, being careful not to lift any of the gears. Inspect the gears and bearings for any defects, wear, or contamination before removal. To remove the gears and bearings, swiftly and evenly lift from the housing. This can be done by hand as the bearings are a slip fit (see Figure C).

WARNING When rotating gears keep hands and fingers clear from the gear mesh.

8) With all of the gears removed, drive the input seal out towards the engine adapter. It is required to change the input seal any time the input gear has been removed from the housing.

9) To remove the bearings from the gears, use a gear puller or Arbor press (see Figure D).

NOTE: Bearings MUST be replaced any time they have been removed from the gear.

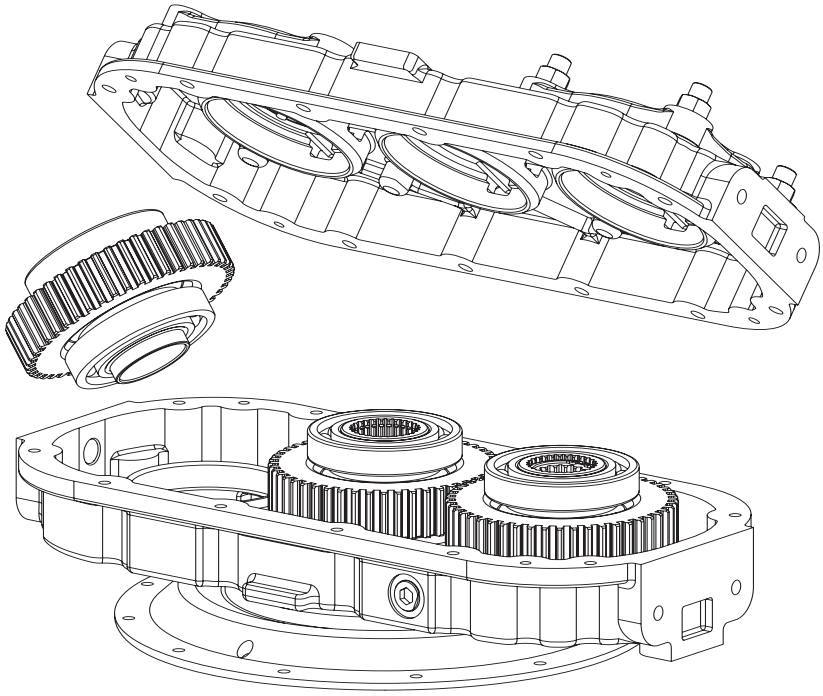


Figure C

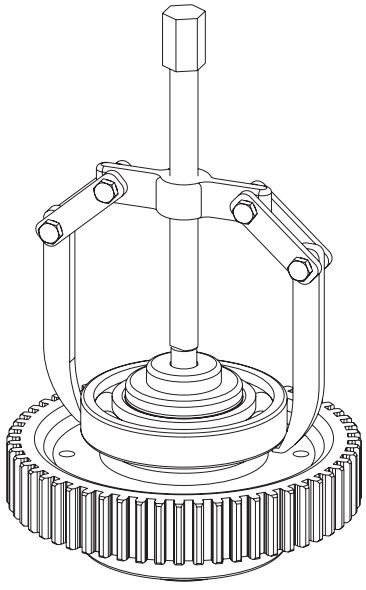


Figure D

REASSEMBLY INSTRUCTIONS

Before reassembling the pump drive gear box, make sure that both housings have been cleaned and inspected. Because of the modular design of the Durst pump drives, the adapter groups can be either installed after the gear box has been assembled or left on during assembly.

1) Install the bearing onto the gear with the shield FACING the gear and the open ball bearing facing out (see Figure E).

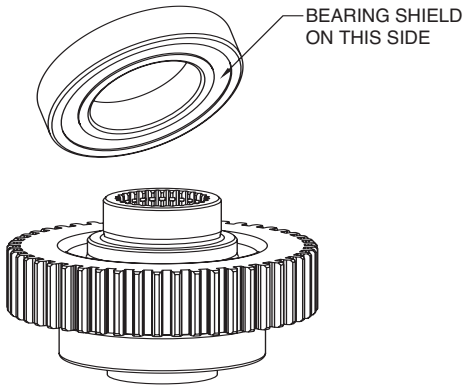


Figure E

CAUTION For proper oil flow it is mandatory that the bearing shield is facing toward the gear!

2) Use a flat razor blade to scrape residual sealant from the sealing surfaces of both housing halves. Then inspect both housings for any contaminates or visual defects. With a clean towel or rag wipe the housings clean.

3) The gears have retaining ring grooves on the output side and a seal lip on the input side. Install the gears into the housing half with the input side of the gear facing down, or to where the engine adapter would be attached (see Figure F).

Tip: Apply a small coat of oil to the outside of the bearing to allow gear and bearing to slide into housing easier.

4) Place approximately a 1/8" bead of Loctite 587 or equivalent sealant, along the sealing surface of the input housing half.

CAUTION Applying too much sealant to sealing surfaces may cause excessive sealant to break loose inside gear box and damage gears, bearings, or splines.

5) Place the output housing half together with the input housing. Both housings must be orientated in the same direction for the dowel pin holes to line up properly (see Figure G).

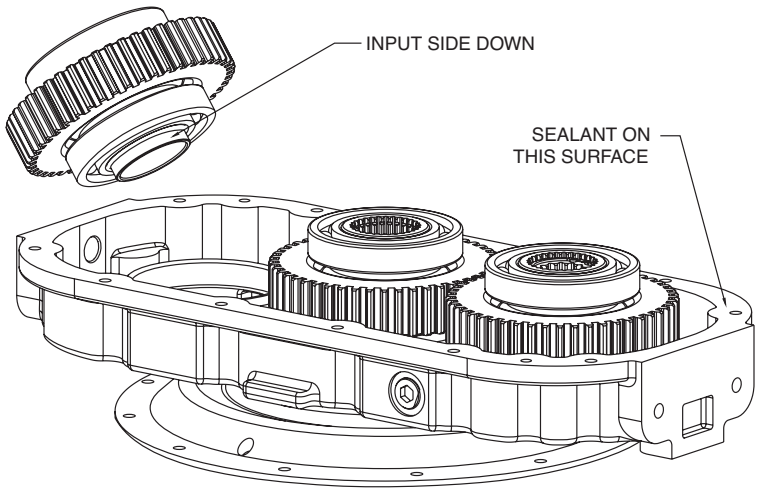


Figure F

6) Press in the two (2) dowel pins to insure proper alignment. Evenly install and tighten the cap screws. Refer to Table 1 (see page 33) for proper torque specifications.

7) Turn over the assembled gear box to install the input seal. Apply a small coat of oil to the gear surface to allow the seal to properly seat. Apply a thin coat of Loctite 609 to the seal O.D. and press into place, .060" below flush with the gear. Pressing the seal too far will create a leak or possibly block oil to the bearings (see Figure H).

CAUTION **Do not use sharp objects for pressing in seals. Press only on the outer edge of the seal to keep from bending or damaging the seal casing.**

8) To install the dipstick, upright the gear box. Apply Loctite 609 to the dipstick tube and insert the dipstick tube until the expanded neck bottoms out on the gear box housing. In all cases (except 1PD06) make certain that the second hole is plugged with a 012326 expansion plug. Note that the 1PD06 has only one dipstick location on the left side.

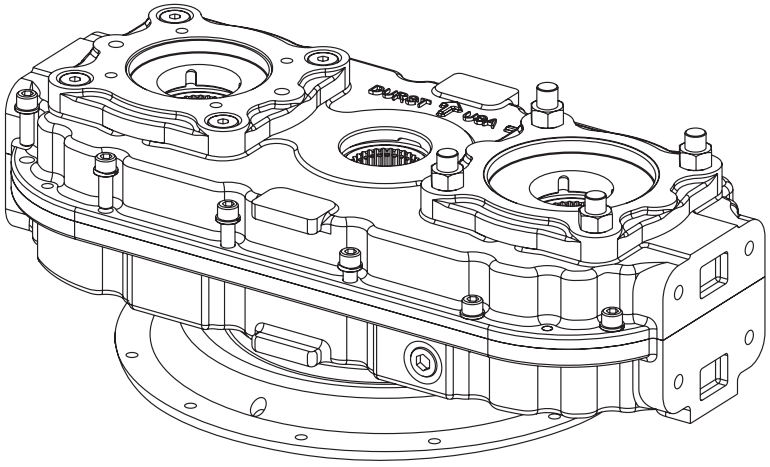


Figure G

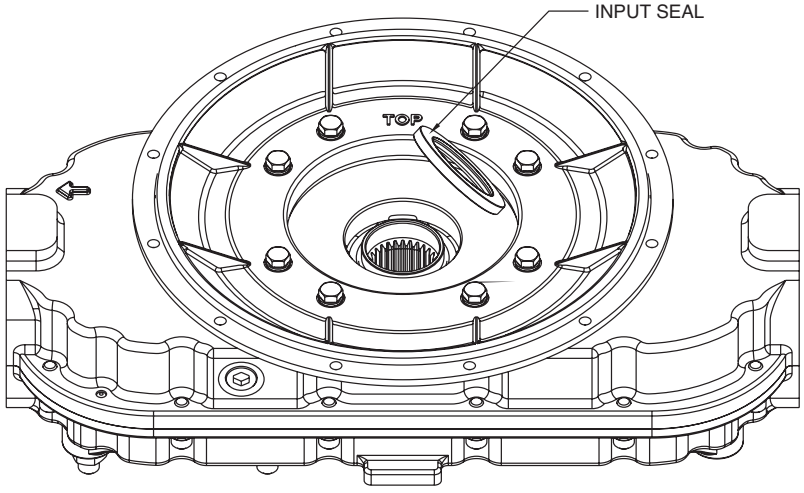


Figure H

LUBRICATION AND OIL FILLING INSTRUCTIONS

Oil flow and circulation in a gear box is one of the most important features to give all internal parts the maximum life. The Durst pump drive design incorporates several key features from previous designs. ISO-LUBE is no longer necessary due to strategically placed oil ports and ribs. When filled to the proper level, oil will be circulated within the box to each set of bearings, and across all the pump splines for smooth operation. Because the pump spline adapters and the input shaft are exposed to the oil within the pump drive, do not apply grease or any type of corrosion prevention materials to the splines, as these will contaminate the gear box oil.

All Durst pump drives are shipped without oil. Verify that the drain plug is tightened to 50ft.lbs.

1) Fill pump drive gear box to MAX oil level on dipstick or to the oil level plug.

CAUTION **DO NOT over fill, as this will result in overheating and possible failure of the pump drive!**

2) It is recommended to change oil after the first 500 hours or 3 months of service, which ever occurs first. Thereafter, and under normal operating conditions Durst recommends that the oil be changed every 1000 hours or 6 months of service.

3) Stop engine before attempting to check or add oil.

4) Clean around dipstick and oil fill hole before checking or adding oil.

5) Drain oil while the unit is still warm.

WARNING **Hot oil can cause severe burns. Use extreme care when removing lubrication plugs and vents!**

6) Inspect and clean magnetic drain plug for contamination or metal particles before replacing.

OIL CAPACITY

The following charts indicate the quantity of oil that a NEW box requires. When changing the oil some residual is left in the box, this will require less oil to fill the box than what is shown below. Only fill to the MAX oil level on the dipstick or to the oil level plug otherwise overheating may occur.

Maximum Operating oil temp for all standard oils: 210°F (99°C)

Maximum Operating oil temp for all synthetic oils: 250°F (121°C)

RECOMMENDED OIL LUBRICANT GRADE

Below -10°F	Mobile SHC 630 Synthetic or equivalent
-10°F to 100°F	80w-90 or EP90 (APL-GL-5)
Above 100°F	Mobile SHC 630 Synthetic or equivalent

6 INCH GEAR CENTERS

1PD06 Normal Mounting	
Ratio	**Oil Capacity**
1.67 Inc.	2.88 Qts. / 2.75 Liters
1.57 Inc.	
1.48 Inc.	3.00 Qts. / 2.84 Liters
1.40 Inc.	
1.32 Inc.	
1.25 Inc.	
1.18 Inc.	
1:1	2.75 Qts. / 2.60 Liters
1.18 Dec.	
1.25 Dec.	
1.32 Dec.	
1.40 Dec.	
1.48 Dec.	
1.57 Dec.	
1.67 Dec.	

1PD06 Inverted Mounting	
Ratio	**Oil Capacity**
1.67 Inc.	2.18 Qts. / 2.06 Liters
1.57 Inc.	
1.48 Inc.	2.31 Qts. / 2.18 Liters
1.40 Inc.	
1.32 Inc.	
1.25 Inc.	
1.18 Inc.	
1:1	2.31 Qts. / 2.18 Liters
1.18 Dec.	
1.25 Dec.	
1.32 Dec.	
1.40 Dec.	
1.48 Dec.	
1.57 Dec.	
1.67 Dec.	2.43 Qts. / 2.30 Liters

2PD06 Normal Mounting	
Ratio	**Oil Capacity**
1.67 Inc.	3.25 Qts. / 3.07 Liters
1.57 Inc.	
1.48 Inc.	2.88 Qts. / 2.73 Liters
1.40 Inc.	3.13 Qts. / 2.96 Liters
1.32 Inc.	3.50 Qts. / 3.31 Liters
1.25 Inc.	
1.18 Inc.	3.50 Qts. / 3.31 Liters
1:1	3.62 Qts. / 3.43 Liters
1.18 Dec.	
1.25 Dec	
1.32 Dec.	2.75 Qts. / 2.60 Liters
1.40 Dec.	3.13 Qts. / 2.96 Liters
1.48 Dec.	3.25 Qts. / 3.07 Liters
1.57 Dec.	
1.67 Dec.	2.38 Qts. / 2.25 Liters

2PD06 Vertical Mounting	
Ratio	**Oil Capacity**
1.67 Inc.	3.10 Qts. / 2.93 Liters
1.57 Inc.	
1.48 Inc.	3.60 Qts. / 3.41 Liters
1.40 Inc.	3.60 Qts. / 3.41 Liters
1.32 Inc.	2.20 Qts. / 2.08 Liters
1.25 Inc.	
1.18 Inc.	2.30 Qts. / 2.18 Liters
1:1	3.0 Qts. / 2.84 Liters
1.18 Dec.	2.75 Qts. / 2.60 Liters
1.25 Dec.	
1.32 Dec.	2.60 Qts. / 2.46 Liters
1.40 Dec.	
1.48 Dec.	2.50 Qts. / 2.36 Liters
1.57 Dec.	
1.67 Dec.	2.80 Qts. / 2.65 Liters

3PD06 Normal Mounting	
Ratio	**Oil Capacity**
1.52 Inc.	
1.36 Inc.	
1.29 Inc.	
1.17 Inc.	
1:1	3.75 Qts. / 3.54 Liters
1.17 Dec.	
1.29 Dec.	
1.36 Dec.	

3PD06 Inverted Mounting	
Ratio	**Oil Capacity**
1.52 Inc.	3.63 Qts. / 3.43 Liters
1.36 Inc.	
1.29 Inc.	
1.17 Inc.	
1:1	3.31 Qts. / 3.13 Liters
1.17 Dec.	
1.29 Dec.	
1.36 Dec.	3.25 Qts. / 3.08 Liters

Note: All oil capacities are approximate. Refer to Lubrication and Oil Filling Instructions when adding or changing oil.

8 INCH GEAR CENTERS

2PD08 Normal Mounting	
Ratio	**Oil Capacity**
1.40 Inc.	4.00 Qts. / 3.79 Liters
1.34 Inc.	
1.23 Inc.	
1:1	4.00 Qts. / 3.79 Liters
1.23 Dec.	
1.34 Dec.	
1.40 Dec.	4.00 Qts. / 3.79 Liters

3PD08 Normal Mounting	
Ratio	**Oil Capacity**
1.40 Inc.	5.50 Qts. / 5.20 Liters
1.34 Inc.	
1.23 Inc.	
1:1	5.25 Qts. / 4.96 Liters
1.23 Dec.	
1.34 Dec.	
1.40 Dec.	5.00 Qts. / 4.73 Liters

4PD08 Normal Mounting	
Ratio	**Oil Capacity**
1.40 Inc.	4.25 Qts. / 4.00 Liters
1.34 Inc.	
1.23 Inc.	
1:1	4.38 Qts. / 4.14 Liters
1.23 Dec.	
1.34 Dec.	
1.40 Dec.	4.00 Qts. / 3.78 Liters

2PD08 Vertical Mounting	
Ratio	**Oil Capacity**
1.40 Inc.	
1.34 Inc.	
1.23 Inc.	
1:1	
1.23 Dec.	
1.34 Dec.	
1.40 Dec.	

3PD08 Inverted Mounting	
Ratio	**Oil Capacity**
1.40 Inc.	3.43 Qts. / 3.25 Liters
1.34 Inc.	
1.23 Inc.	
1:1	3.25 Qts. / 3.08 Liters
1.23 Dec.	
1.34 Dec.	
1.40 Dec.	3.43 Qts. / 3.25 Liters

9 INCH GEAR CENTERS

4PD09 Normal Mounting	
Ratio	**Oil Capacity**
1.40 Inc.	6.75 Qts. / 6.39 Liters
1.30 Inc.	
1.20 Inc.	
1:1	6.50 Qts. / 6.15 Liters
1.20 Dec.	
1.30 Dec.	
1.40 Dec.	6.0 Qts. / 5.68 Liters

Note: All oil capacities are approximate. Refer to Lubrication and Oil Filling Instructions when adding or changing oil.

10.5 INCH GEAR CENTERS

2PD10 Normal Mounting	
Ratio	**Oil Capacity**
1.38 Inc.	4.50 Qts. / 4.25 Liters
1.29 Inc.	
1.21 Inc.	5.25 Qts. / 4.97 Liters
1:1	6.00 Qts. / 5.68 Liters
1.21 Dec.	5.25 Qts. / 4.97 Liters
1.29 Dec.	
1.38 Dec.	5.25 Qts. / 4.97 Liters

3PD10 Normal Mounting	
Ratio	**Oil Capacity**
1.38 Inc.	10.50 Qts. / 9.94 Liters
1.29 Inc.	
1.21 Inc.	
1:1	8.25 Qts. / 7.80 Liters
1.21 Dec.	
1.29 Dec.	
1.38 Dec.	

2PD10 Vertical Mounting	
Ratio	**Oil Capacity**
1.38 Inc.	4.50 Qts. / 4.25 Liters
1.29 Inc.	
1.21 Inc.	
1:1	4.50 Qts. / 4.25 Liters
1.21 Dec.	
1.29 Dec.	
1.38 Dec.	4.50 Qts. / 4.25 Liters

3PD10 Inverted Mounting	
Ratio	**Oil Capacity**
1.38 Inc.	6.25 Qts. / 5.91 Liters
1.29 Inc.	
1.21 Inc.	
1:1	5.75 Qts. / 5.44 Liters
1.21 Dec.	
1.29 Dec.	
1.38 Dec.	5.50 Qts. / 5.20 Liters

11.3 INCH GEAR CENTERS

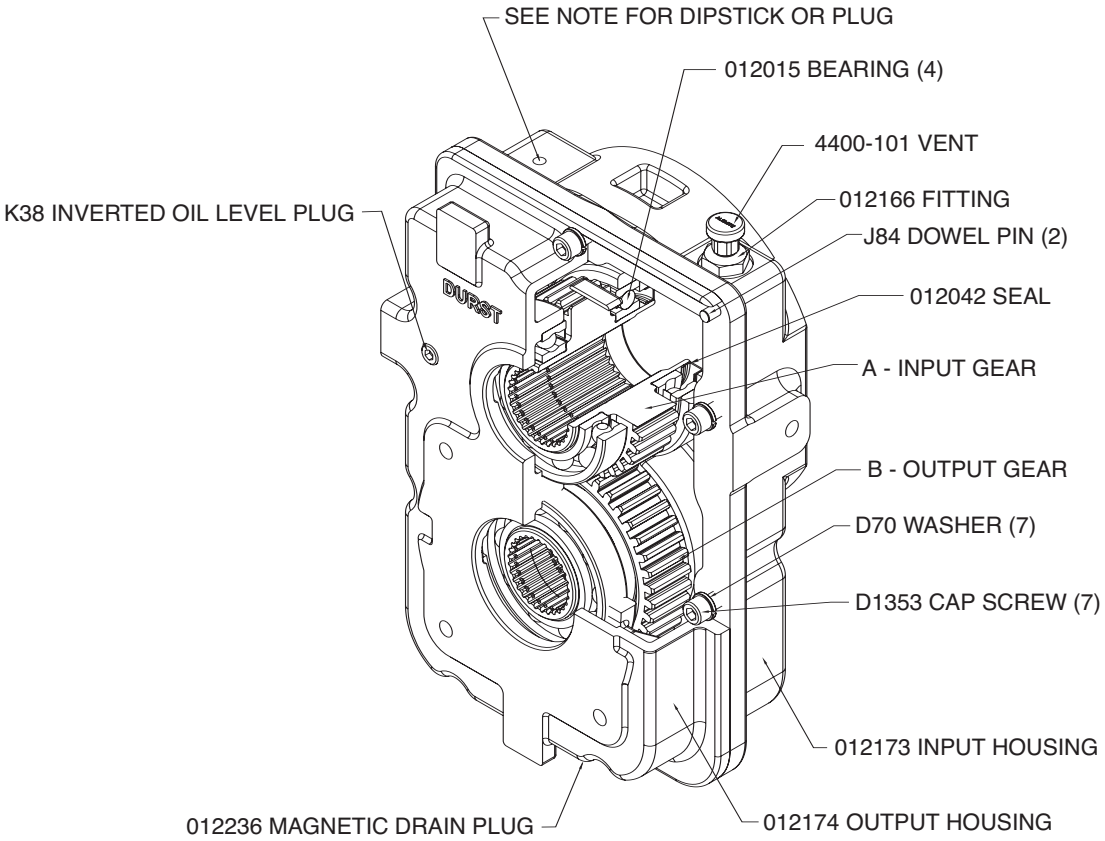
4PD11 Normal Mounting	
Ratio	**Oil Capacity**
1.39 Inc.	7.25 Qts. / 6.86 Liters
1.31 Inc.	
1.16 Inc.	
1:1	7.50 Qts. / 7.10 Liters
1.16 Dec.	
1.31 Dec.	
1.39 Dec.	6.25 Qts. / 5.91 Liters.

Note: All oil capacities are approximate. Refer to Lubrication and Oil Filling Instructions when adding or changing oil.

PART NUMBER CHARTS FOR MODULAR GEAR BOXES & ADAPTERS

Due to the modular design of the new pump drives, the number of parts needed to build any model is significantly reduced. The following charts contain a parts list for all the options and service parts for this pump drive line.

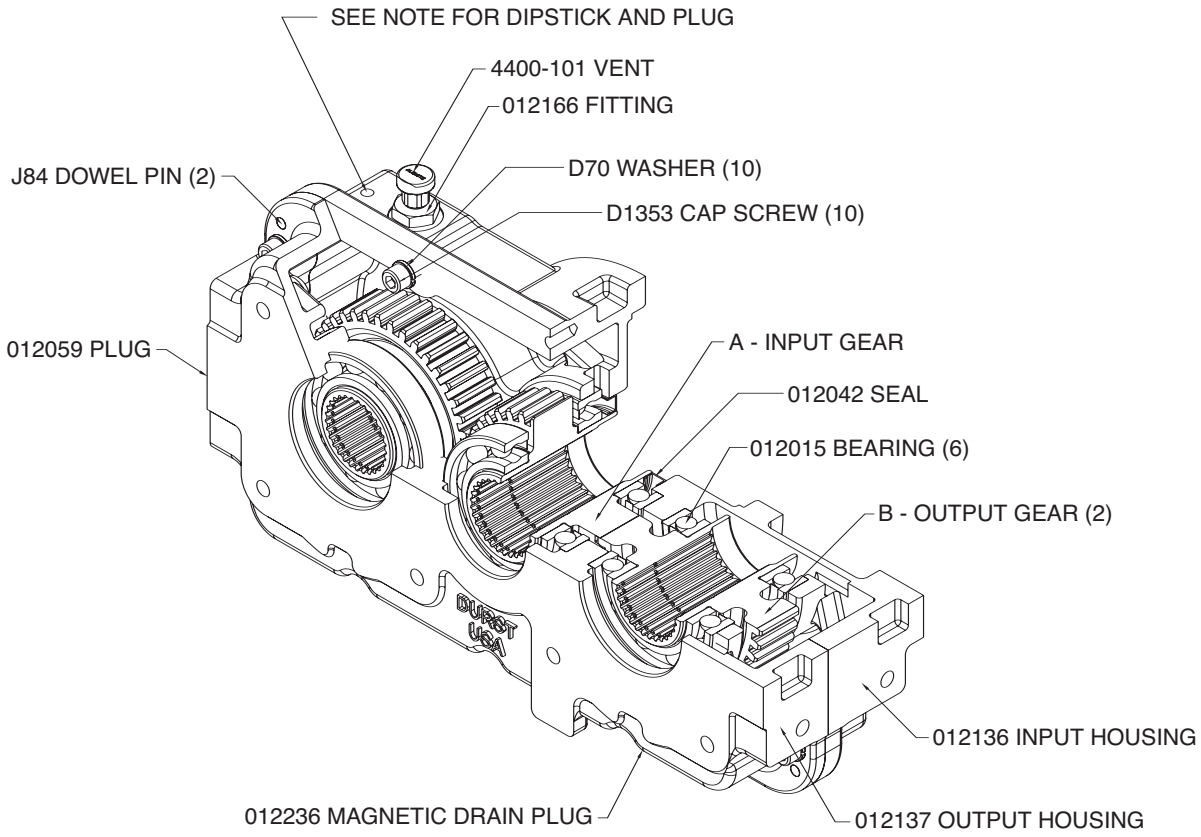
1PD06 MODULE PUMP DRIVE



The following chart lists all of the complete assembly part numbers with the prefix of "K". All of the pump drive gear boxes can be purchased as a complete kit and will come fully assembled with all of the part numbers as shown in the above figure including the gears, shown in the table to create the desired ratio. Note: Dipstick, P/N 012306, is not provided in gear box kit, but is required in all normal mounted installations, left side only. Expansion plug, P/N 012326, is not provided in gear box kit, but is required in all inverted installations. For replacement gears with bearings assembled, order gear as a kit with a "K" number (i.e. To order a 012104 gear with (2) 012015 bearings, order as K12104).

Complete Gear Box P/N	Ratio	Input Gear A	Output Gear B
K12213	1.67 Inc.	012110	012097
K12211	1.57 Inc.	012109	012098
K12209	1.48 Inc.	012108	012099
K12207	1.40 Inc.	012107	012100
K12205	1.32 Inc.	012106	012101
K12416	1.25 Inc.	012409	012408
K12203	1.18 Inc.	012105	012102
K12201	1:1	012104	012104
K12202	1.18 Dec.	012102	012105
K12415	1.25 Dec.	012408	012409
K12204	1.32 Dec.	012101	012106
K12206	1.40 Dec.	012100	012107
K12208	1.48 Dec.	012099	012108
K12210	1.57 Dec.	012098	012109
K12212	1.67 Dec.	012097	012110

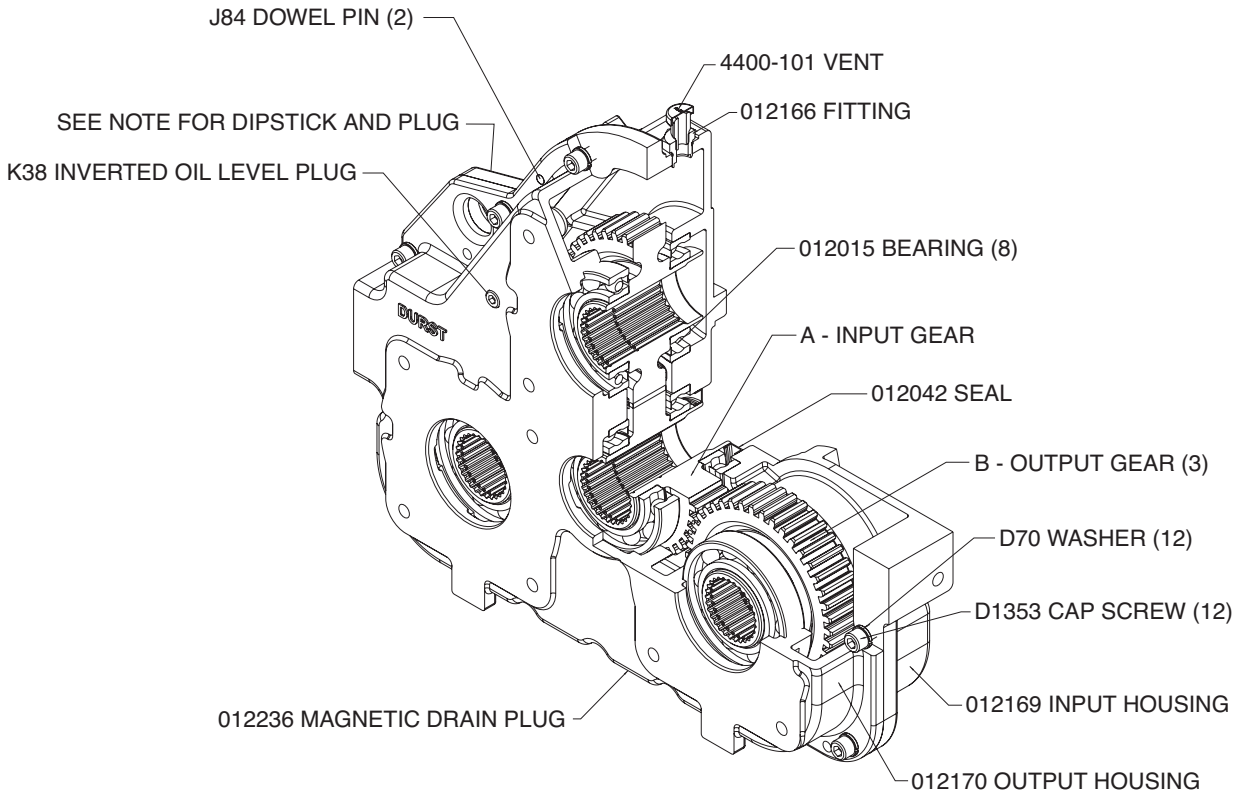
2PD06 MODULE PUMP DRIVE



The following chart lists all of the complete assembly part numbers with the prefix of "K". All of the pump drive gear boxes can be purchased as a complete kit and will come fully assembled with all of the part numbers as shown in the above figure including the gears, shown in the below table to create the desired ratio. Note: Dipstick, P/N 012307, is not provided in gear box kit, but is required in all normal mounted installations. It can be installed either left or right side. Two expansion plugs, P/N 012326, are not provided in gear box kit, but are required in all vertical installations. For replacement gears with bearings assembled, order gear as a kit with a "K" number (i.e. To order a 012104 gear with (2) 012015 bearings, order as K12104).

Complete Gear Box P/N	Ratio	Input Gear A	Output Gear B
K12226	1.67 Inc.	012110	012097
K12224	1.57 Inc.	012109	012098
K12222	1.48 Inc.	012108	012099
K12220	1.40 Inc.	012107	012100
K12218	1.32 Inc.	012106	012101
K12411	1.25 Inc.	012409	012408
K12216	1.18 Inc.	012105	012102
K12214	1:1	012104	012104
K12215	1.18 Dec.	012102	012105
K12410	1.25 Dec.	012408	012409
K12217	1.32 Dec.	012101	012106
K12219	1.40 Dec.	012100	012107
K12221	1.48 Dec.	012099	012108
K12223	1.57 Dec.	012098	012109
K12225	1.67 Dec.	012097	012110

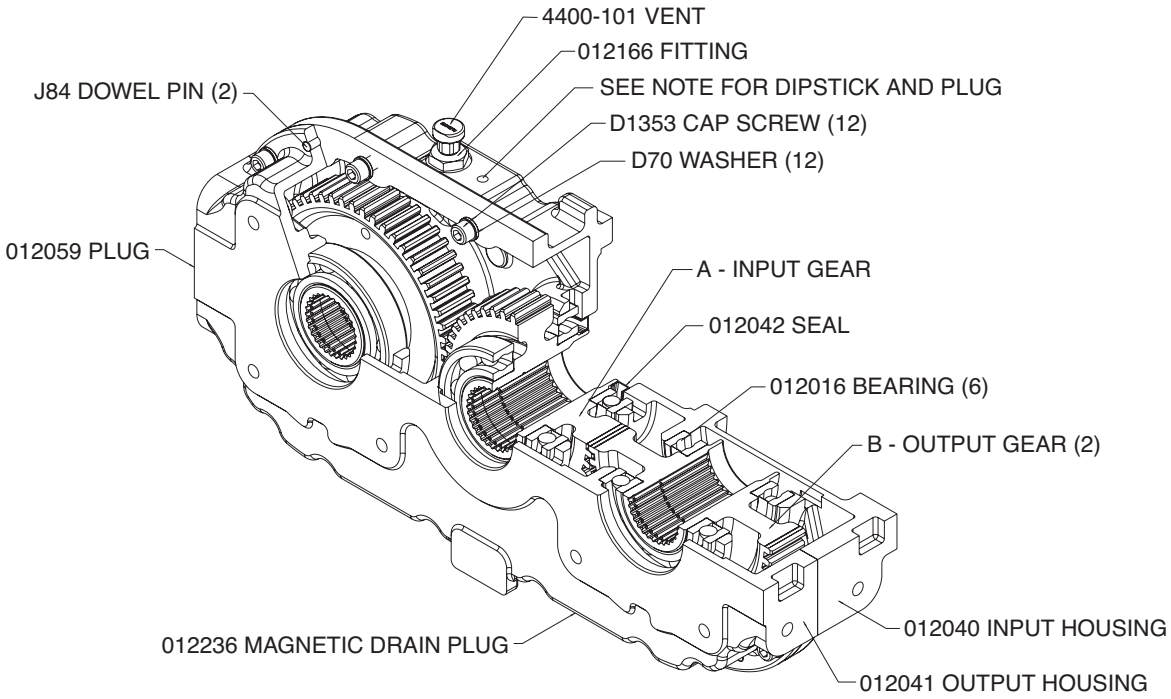
3PD06 MODULE PUMP DRIVE



The following chart lists all of the complete assembly part numbers with the prefix of "K". All of the pump drive gear boxes can be purchased as a complete kit and will come fully assembled with all of the part numbers as shown in the above figure including the gears, shown in the below table to create the desired ratio. Note: Dipstick, P/N 012308, is not provided in gear box kit, but is required in all normal mounted installations. It can be installed either left or right side. Two expansion plugs, P/N 012326, are not provided in gear box kit, but are required in all inverted installations. For replacement gears with bearings assembled, order gear as a kit with a "K" number (i.e. To order a 012105 gear with (2) 012015 bearings, order as K12105).

Complete Gear Box P/N	Ratio	Input Gear A	Output Gear B
K12235	1.52 Inc.	012111	012101
K12233	1.36 Inc.	012110	012102
K12231	1.29 Inc.	012109	012103
K12229	1.17 Inc.	012107	012104
K12227	1:1	012105	012105
K12228	1.17 Dec.	012104	012107
K12230	1.29 Dec.	012103	012109
K12232	1.36 Dec.	012102	012110

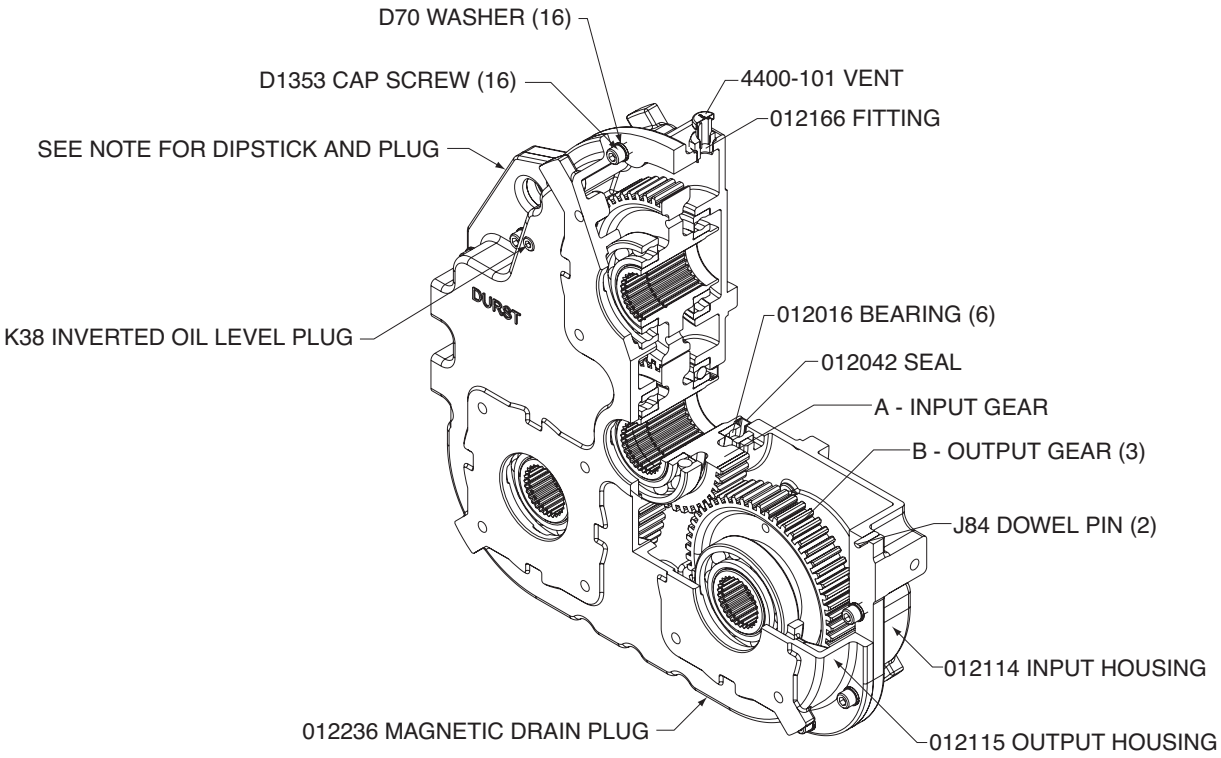
2PD08 MODULE PUMP DRIVE



The following chart lists all of the complete assembly part numbers with the prefix of "K". All of the pump drive gear boxes can be purchased as a complete kit and will come fully assembled with all of the part numbers as shown in the above figure including the gears, shown in the following table to create the desired ratio. Note: Dipstick, P/N 012260, is not provided in gear box kit, but is required in all normal mounted installations. It can be installed either left or right side. Two expansion plugs, P/N 012326, are not provided in gear box kit, but are required in all vertical installations. For replacement gears with bearings assembled, order gear as a kit with a "K" number (i.e. To order a 012010 gear with (2) 012016 bearings, order as K12010).

Complete Gear Box P/N	Ratio	Input Gear A	Output Gear B
K12092	1.53 Inc.	012049	012048
K12091	1.40 Inc.	012013	012007
K12089	1.34 Inc.	012012	012008
K12087	1.23 Inc.	012011	012009
K12085	1:1	012010	012010
K12086	1.23 Dec.	012009	012011
K12088	1.34 Dec.	012008	012012
K12090	1.40 Dec.	012007	012013

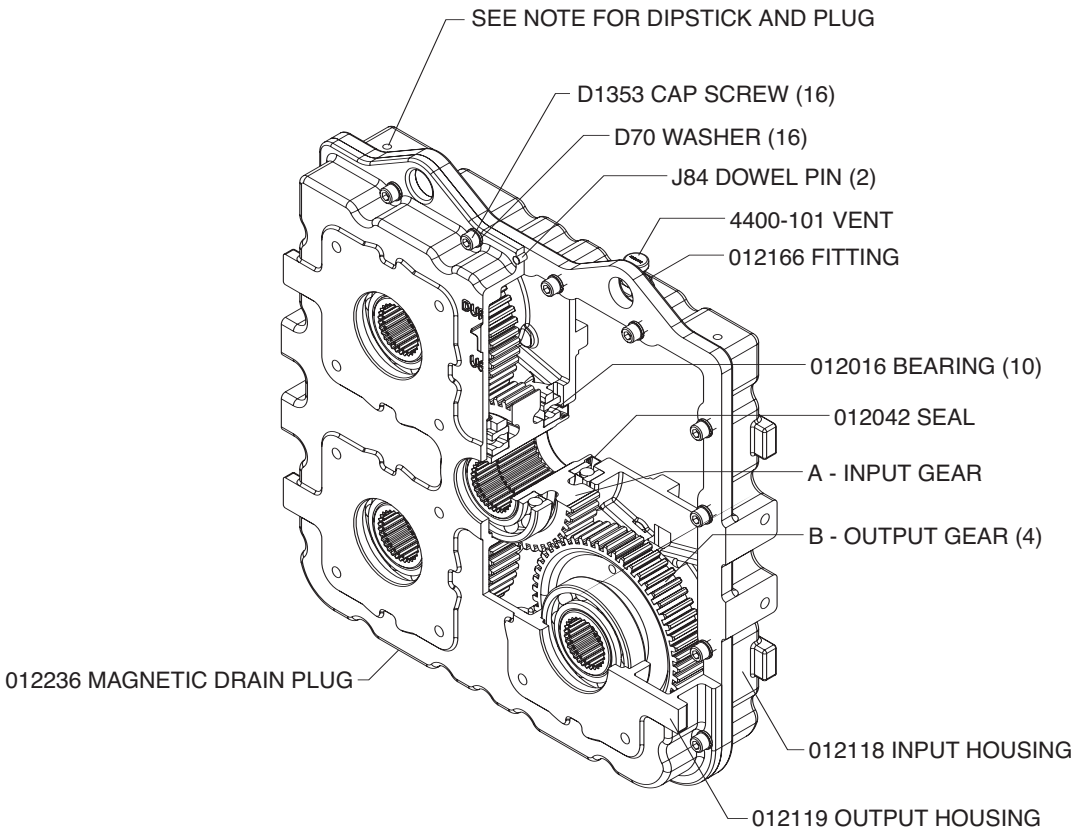
3PD08 MODULE PUMP DRIVE



The following chart lists all of the complete assembly part numbers with the prefix of "K". All of the pump drive gear boxes can be purchased as a complete kit and will come fully assembled with all of the part numbers as shown in the above figure including the gears, shown in the following table to create the desired ratio. Note: Dipstick, P/N 012294, is not provided in gear box kit, but is required in all normal mounted installations. It can be installed either left or right side. Two expansion plugs, P/N 012326, are not provided in gear box kit, but are required in all inverted installations. For replacement gears with bearings assembled, order gear as a kit with a "K" number (i.e. To order a 012010 gear with (2) 012016 bearings, order as K12010).

Complete Gear Box P/N	Ratio	Input Gear A	Output Gear B
K12130	1.53 Inc.	012049	012048
K12129	1.40 Inc.	012013	012007
K12127	1.34 Inc.	012012	012008
K12125	1.23 Inc.	012011	012009
K12123	1:1	012010	012010
K12124	1.23 Dec.	012009	012011
K12126	1.34 Dec.	012008	012012
K12128	1.40 Dec.	012007	012013

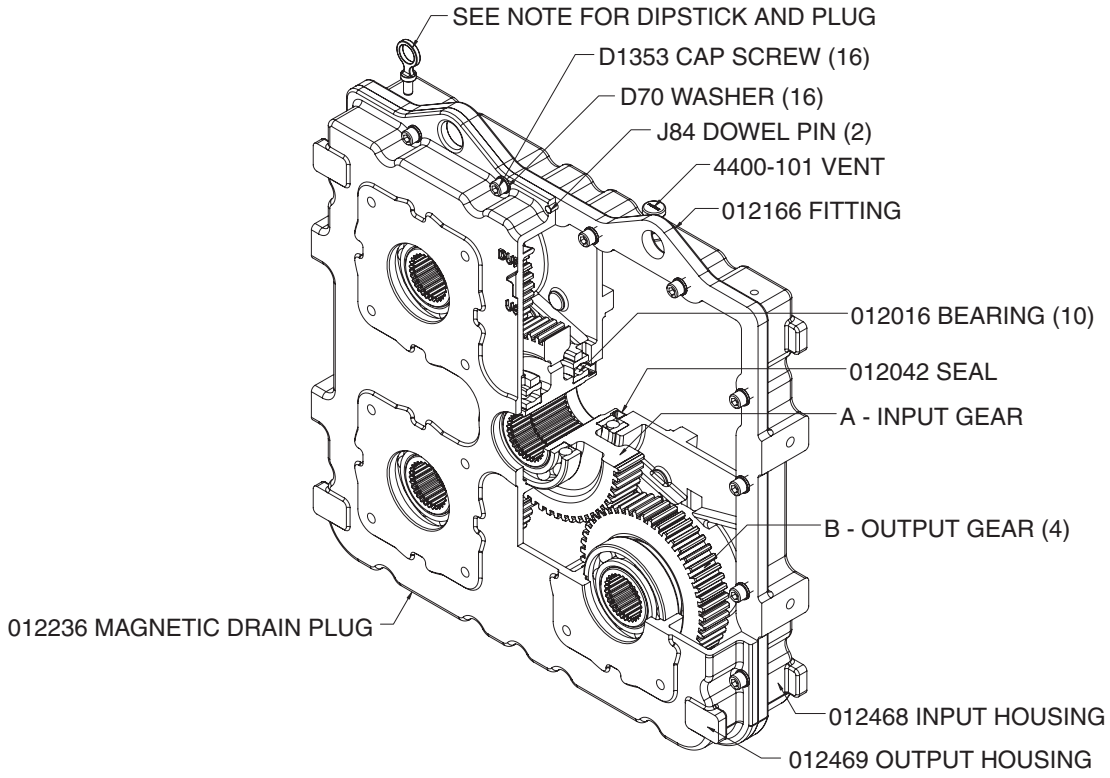
4PD08 MODULE PUMP DRIVE



The following chart lists all of the complete assembly part numbers with the prefix of "K". All of the pump drive gear boxes can be purchased as a complete kit and will come fully assembled with all of the part numbers as shown in the above figure including the gears, shown in the following table to create the desired ratio. Note: Dipstick, P/N 012309, is not provided in gear box kit, but is required in all normal mounted installations. It can be installed either left or right side. The opposite side is plugged with P/N 012326, expansion plug, provided with dipstick. For replacement gears with bearings assembled, order gear as a kit with a "K" number (i.e. To order a 012010 gear with (2) 012016 bearings, order as K12010).

Complete Gear Box P/N	Ratio	Input Gear A	Output Gear B
K12182	1.53 Inc.	012049	012048
K12181	1.40 Inc.	012013	012007
K12179	1.34 Inc.	012012	012008
K12177	1.23 Inc.	012011	012009
K12175	1:1	012010	012010
K12176	1.23 Dec.	012009	012011
K12178	1.34 Dec.	012008	012012
K12180	1.40 Dec.	012007	012013

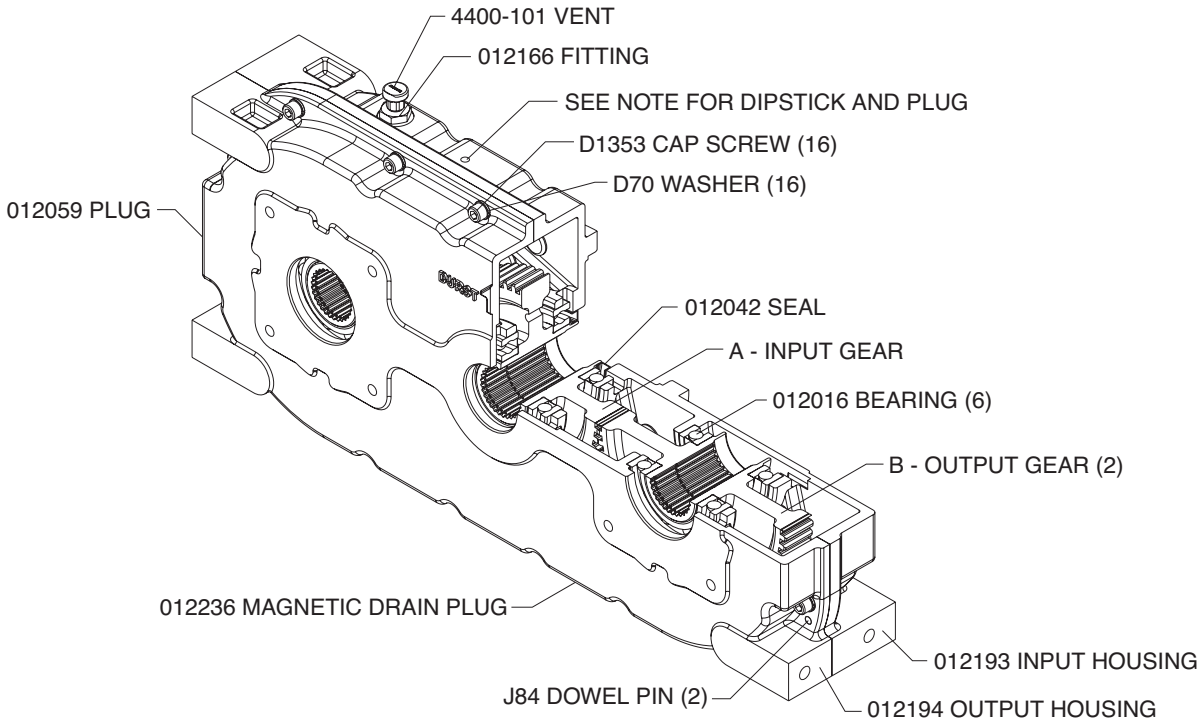
4PD09 MODULE PUMP DRIVE



The following chart lists all of the complete assembly part numbers with the prefix of "K". All of the pump drive gear boxes can be purchased as a complete kit and will come fully assembled with all of the part numbers as shown in the above figure including the gears, shown in the following table to create the desired ratio. Note: Dipstick, P/N 012527, is not provided in gear box kit, but is required in all normal mounted installations. It can be installed either left or right side. The opposite side is plugged with P/N 012326, expansion plug, provided with dipstick. For replacement gears with bearings assembled, order gear as a kit with a "K" number (i.e. To order a 012479 gear with (2) 012016 bearings, order as K12479).

Complete Gear Box P/N	Ratio	Input Gear A	Output Gear B
K12487	1.40 Inc.	012052	012476
K12485	1.30 Inc.	012480	012477
K12483	1.20 Inc.	012051	012478
K12481	1:1	012479	012479
K12482	1.20 Dec.	012478	012051
K12484	1.30 Dec.	012477	012480
K12486	1.40 Dec.	012476	012052

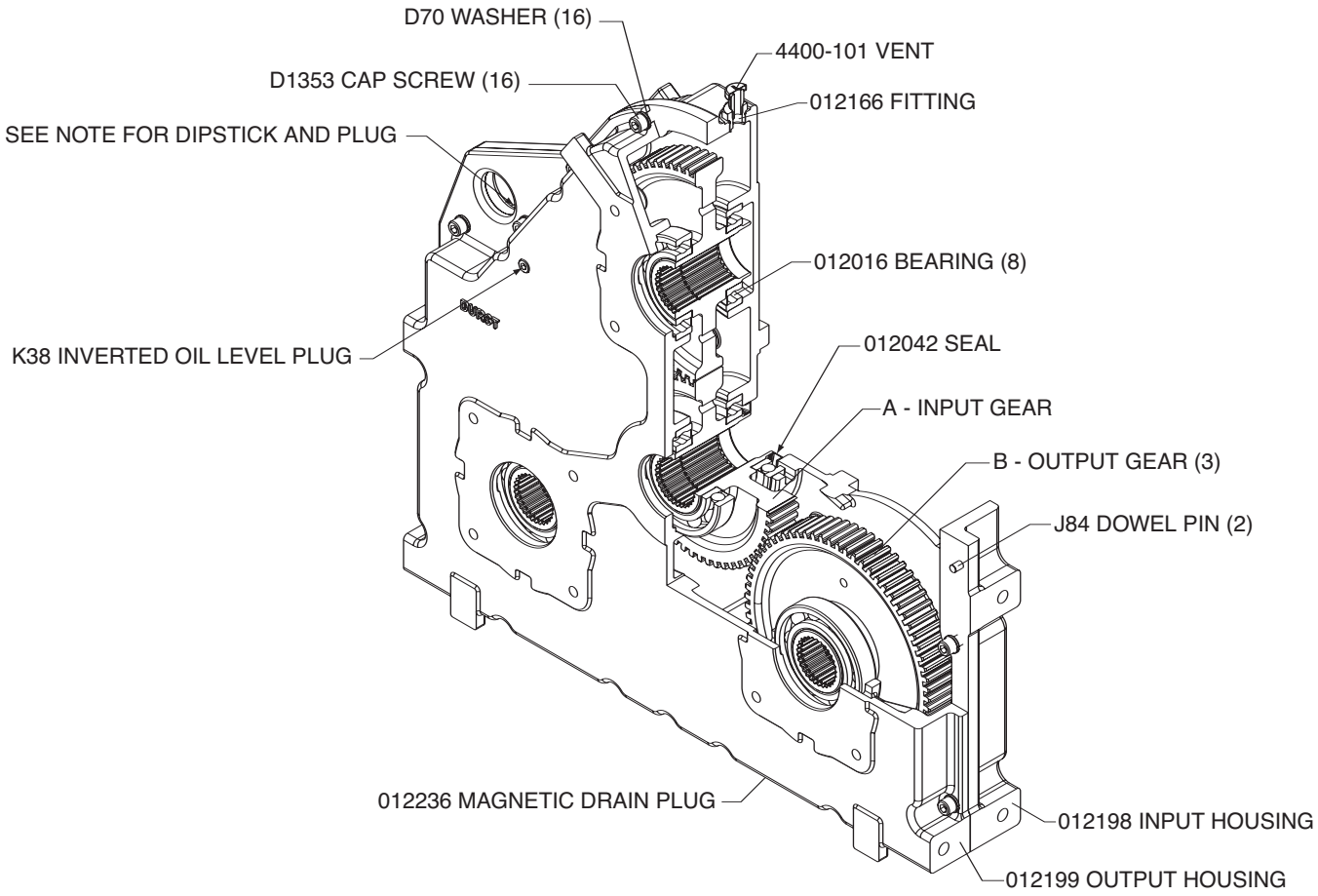
2PD10 MODULE PUMP DRIVE



The following chart lists all of the complete assembly part numbers with the prefix of "K". All of the pump drive gear boxes can be purchased as a complete kit and will come fully assembled with all of the part numbers as shown in the above figure including the gears, shown in the following table to create the desired ratio. Note: Dipstick, see chart for part number, is not provided in gear box kit, but is required in all normal mounted installations. It can be installed either left or right side. Two expansion plugs, P/N 012326, are not provided in gear box kit, but are required in all vertical installations. For replacement gears with bearings assembled, order gear as a kit with a "K" number (i.e. To order a 012052 gear with (2) 012016 bearings, order as K12052).

Complete Gear Box P/N	Ratio	Input Gear A	Output Gear B	Dipstick C
K12243	1.38 Inc.	012056	012011	012413
K12241	1.29 Inc.	012055	012012	012413
K12239	1.21 Inc.	012054	012050	012413
K12237	1:1	012052	012052	012310
K12238	1.21 Dec.	012050	012054	012413
K12240	1.29 Dec.	012012	012055	012413
K12242	1.38 Dec.	012011	012056	012413

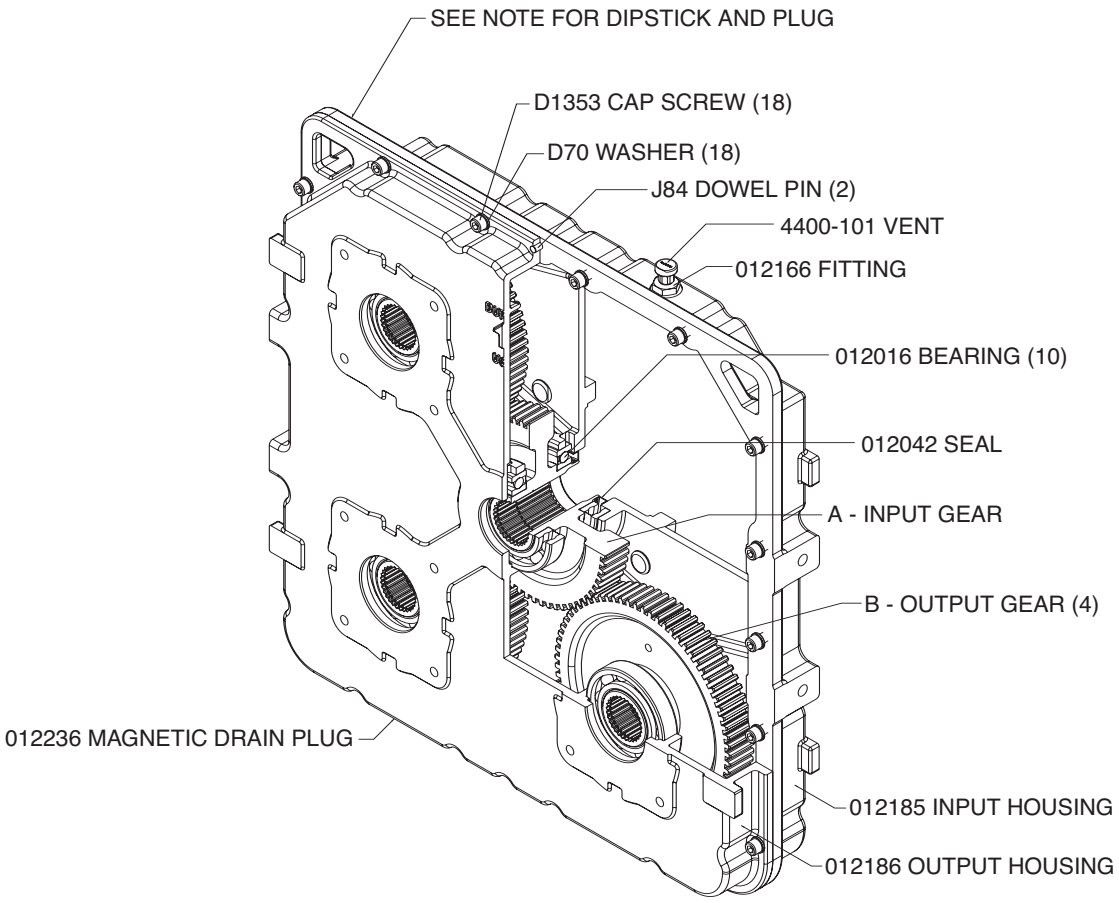
3PD10 MODULE PUMP DRIVE



The following chart lists all of the complete assembly part numbers with the prefix of "K". All of the pump drive gear boxes can be purchased as a complete kit and will come fully assembled with all of the part numbers as shown in the above figure including the gears, shown in the following table to create the desired ratio. Note: Dipstick, P/N 012311, is not provided in gear box kit, but is required in all normal mounted installations. It can be installed either left or right side. Two expansion plugs, P/N 012326, are not provided in gear box kit, but are required in all inverted installations. For replacement gears with bearings assembled, order gear as a kit with a "K" number (i.e. To order a 012052 gear with (2) 012016 bearings, order as K12052).

Complete Gear Box P/N	Ratio	Input Gear A	Output Gear B
K12250	1.38 Inc.	012056	012011
K12248	1.29 Inc.	012055	012012
K12246	1.21 Inc.	012054	012050
K12244	1:1	012052	012052
K12245	1.21 Dec.	012050	012054
K12247	1.29 Dec.	012012	012055
K12249	1.38 Dec.	012011	012056

4PD11 MODULE PUMP DRIVE



The following chart lists all of the complete assembly part numbers with the prefix of "K". All of the pump drive gear boxes can be purchased as a complete kit and will come fully assembled with all of the part numbers as shown in the above figure including the gears, shown in the following table to create the desired ratio. Note: Dipstick, P/N 012325, is not provided in gear box kit, but is required in all normal mounted installations. It can be installed either left or right side. The opposite side is plugged with P/N 012326, expansion plug, provided with dipstick. For replacement gears with bearings assembled, order gear as a kit with a "K" number (i.e. To order a 012053 gear with (2) 012016 bearings, order as K12053).

Complete Gear Box P/N	Ratio	Input Gear A	Output Gear B
K12257	1.39 Inc.	012058	012050
K12255	1.31 Inc.	012057	012051
K12253	1.16 Inc.	012056	012052
K12251	1:1	012053	012053
K12252	1.16 Dec.	012052	012056
K12254	1.31 Dec.	012057	012051
K12256	1.39 Dec.	012050	012058

PUMP SPLINE ADAPTER

The following chart lists all available spline adapters for the Durst pump drives. The spline adapters can be purchased as either complete kits or individual components.

Complete Spline Adapter Kit P/N	Pump Shaft Size	Max. Torque (in-lbs)	Spline	Spline Adapter	Retaining Ring
K12072	SAE A	517	9T-16/32	012014	012044
K12073	SAE B	1,852	13T-16/32	012017	012044
K12074	SAE BB	2,987	15T-16/32	012018	012044
K12075	SAE C	5,677	14T-12/24	012019	012044
K12076	SAE CC	10,777	17T-12/24	012020	012044
K12077	SAE D	15,057	13T-8/16	012021	012044
K12078	SAE F	24,245	15T-8/16	012022	012304
K12264	21T		21T-16/32	012261	012044
K12265	23T		23T-16/32	012262	012044
K12266	27T		27T-16/32	012263	012044

PUMP SPLINE ADAPTER INSTALLATION INSTRUCTIONS

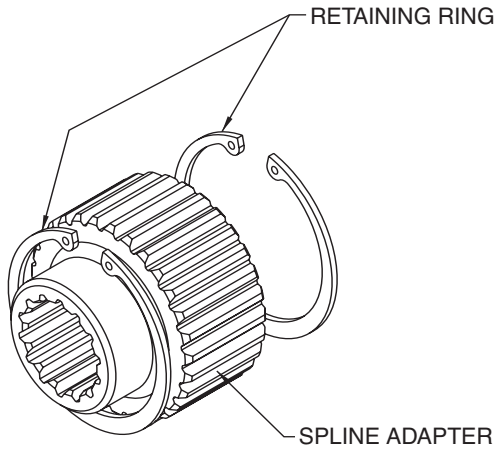


Figure J

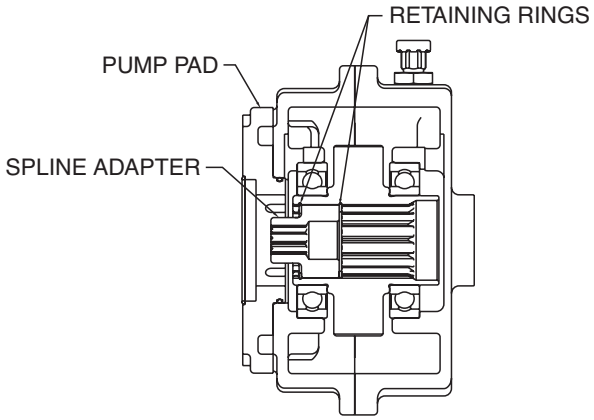


Figure K

1) Install the first retaining ring into the furthest snap ring groove of desired gear (see Figure K). Note that the SAE F spline adapter requires a different retaining ring (see chart).

2) Insert pump spline adapter into gear. Some spline adapters have a necked down spline extension. For proper spline engagement this extension is to be facing the pump pad (see Figure K).

CAUTION Due to an internal oil lubrication system do NOT apply any grease, or spline lubricant as this will contaminate the oil.

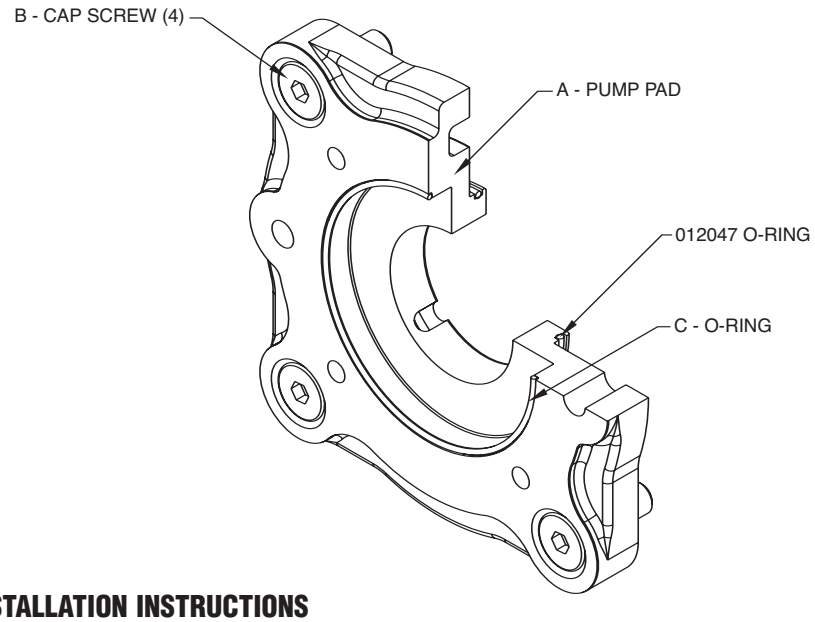
3) Install the second retaining ring into the outermost snap ring groove to contain the pump spline adapter (see Figure K).

PUMP PAD ADAPTER

The following chart lists all available pump pad adapters for the Durst pump drives. The pump pad adapters can be purchased as either complete kits or individual components.

Complete Pump Pad Adapter Kit P/N	SAE Pump Pad Size	Pump Pad A	Cap Screw B	O-Ring C
K12066	A	012023	012060	012079
K12067	B	012024	012060	012080
K12068	C	012025	012060	012081
[1]K12069	D	012026	Stud: 012065	012082
[1]K12449	D	012026	Stud: 012374	012082
[2]K12135	D2	012096	012133	012082
K12070	E	012027	012133	012083
[3]K12356	E45	012355	012133	012083
K12071	F	012028	012133	012084

NOTES:
1. Both SAE "D" kits are supplied with nut P/N 4054-302 (qty. 4). Kit #K12449 uses a 1/2" longer stud than kit #K12069. The longer stud is to be used on all hydraulic pumps with flange thicknesses greater than 1/2 inch, or when more mounting threads are desired.
2. The D2 option allows for mounting SAE D, 2-Bolt, pumps in either the horizontal or vertical position. This can also be used to mount a standard SAE D pump at 45 degrees.
3. The E45 option allows for mounting an SAE E pump at 45 degrees.



PUMP PAD ADAPTER INSTALLATION INSTRUCTIONS

1) Use fresh oil to lubricate all o-rings prior to installation.

2) Install 012047 o-ring onto pilot groove, as shown above.

3) Place pump pad onto gear box and press down until the pump pad fully seats into gear box. Due to the modular design, pump pads can be installed either horizontally or vertically.

4) Install cap screws or stud and nut if applicable. Torque bolts according to Table 1 (see page 33).

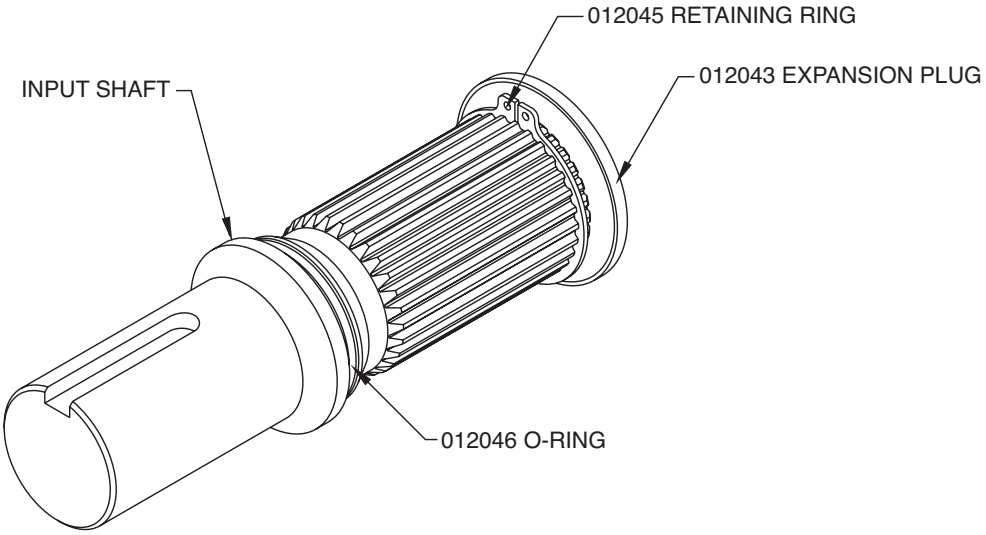
CAUTION Do not apply Loctite or any type of thread locking material to pump pad screws.

5) The "C" o-ring seals the hydraulic pump to the gear box. For installation instructions, see "Installation of Hydraulic Pumps to Durst Pump Drives" (page 7).

INPUT SHAFT OPTIONS

The following chart lists all available input shaft options for the Durst pump drives. The input shafts can be purchased as either complete kits or individual components. In most cases the input shaft can be replaced without affecting the pump pads. However, in some pump drive models, the pump pad(s) overlap the expansion plug. This requires the pump pad(s) to be removed before replacing the input shaft.

Complete Input Shaft Kit P/N	Shaft Description	Max. Torque (ft-lb)	Input Shaft
K12275	29T-12/24	2,325	012120
K12276	20T-10/20	1,790	012121
K12278	15T-8/16	1,545	012285
K12279	2.25 Dia. w/ 0.500 keyway	2,225	012122
K12280	2.50 Dia. w/ 0.625 keyway	2,325	012149
K12281	For SP214 Clutch	N/A	012190
K12282	For SP211 Clutch	N/A	012189
K12283	For C111 Clutch	N/A	012188
K12284	For C110 Clutch	N/A	012187



INPUT SHAFT INSTALLATION INSTRUCTIONS

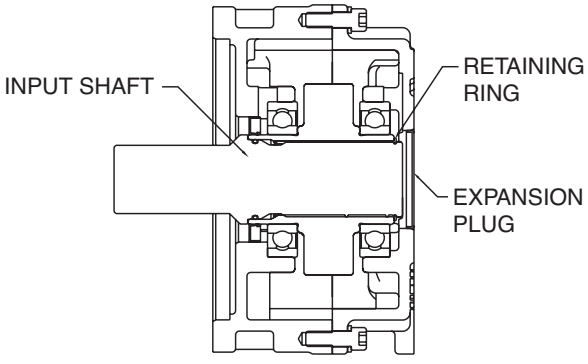
1) Use fresh oil to lubricate all o-rings prior to installation.

2) Install 012046 o-ring into shaft groove.

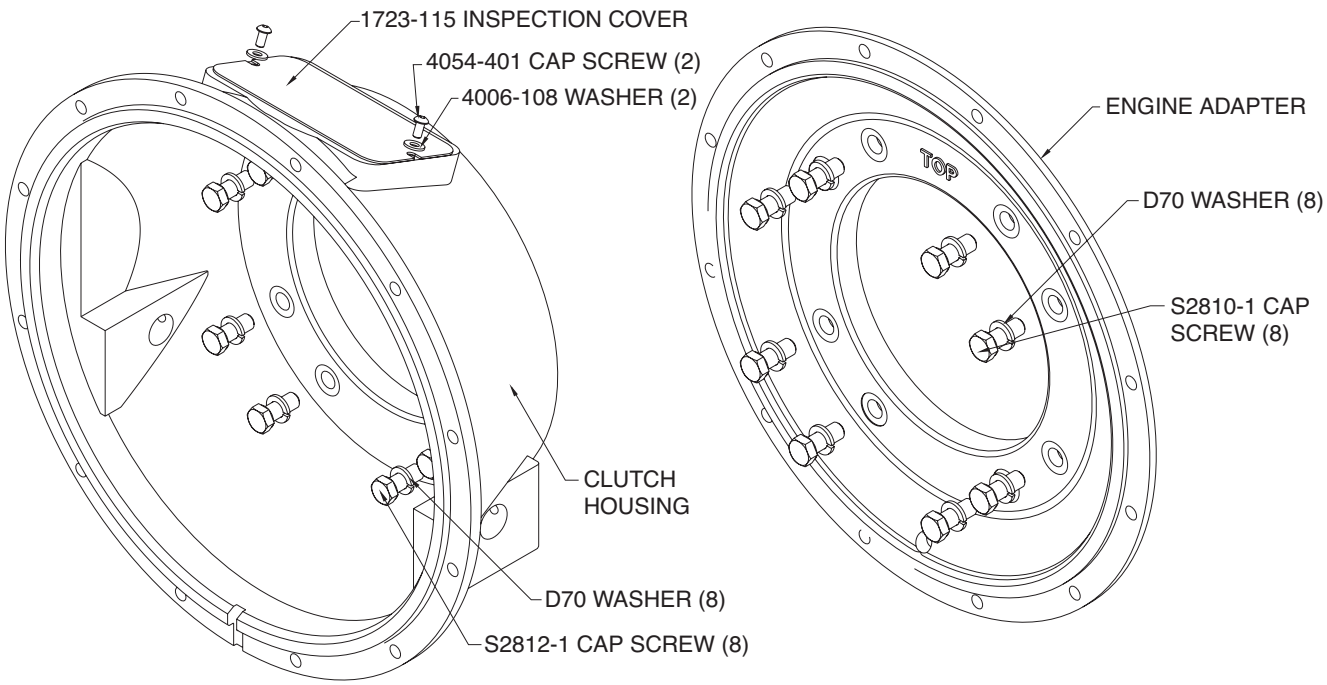
3) Insert shaft into the drive gear of the gear box until the shoulder contacts input gear.

4) Install 012045 retaining ring onto shaft through the back side of the gear box.

5) Apply a thin coat of Loctite 609 or equivalent to the O.D. of the 012043 expansion plug before installation.



CLUTCH HOUSINGS & ENGINE ADAPTERS



The following chart lists all available clutch housings and engine adapters for the Durst pump drives. The clutch housings and engine adapters can be purchased as either complete kits or individual components.

Complete Engine Adapter Kit P/N	SAE Engine Adapter	Engine Mounting Bolt Holes	Engine Adapter
K12061	1	(12) 7/16-14	012034
K12062	2	(12) 3/8-16	012035
K12063	3	(12) 3/8-16	012036
K12064	4	(12) 3/8-16	012037
Complete Clutch Housing Kit P/N	**SAE Clutch Housing**	**Engine Mounting Bolt Holes**	**Clutch Housing**
K12267	1 For SP214 Clutch	(12) 7/16-14	012158
K12268	1 For SP211 Clutch	(12) 7/16-14	012159
K12270	2 For SP211 Clutch	(12) 3/8-16	012161
K12271	2 For C111 Clutch	(12) 3/8-16	012162
K12272	2 For C110 Clutch	(12) 3/8-16	012163
K12611	3 For SP211 Clutch	(12) 3/8-16	012610
K12273	3 For C111 Clutch	(12) 3/8-16	012164
K12274	3 For C110 Clutch	(12) 3/8-16	012165

CLUTCH HOUSING & ENGINE ADAPTER INSTALLATION INSTRUCTIONS

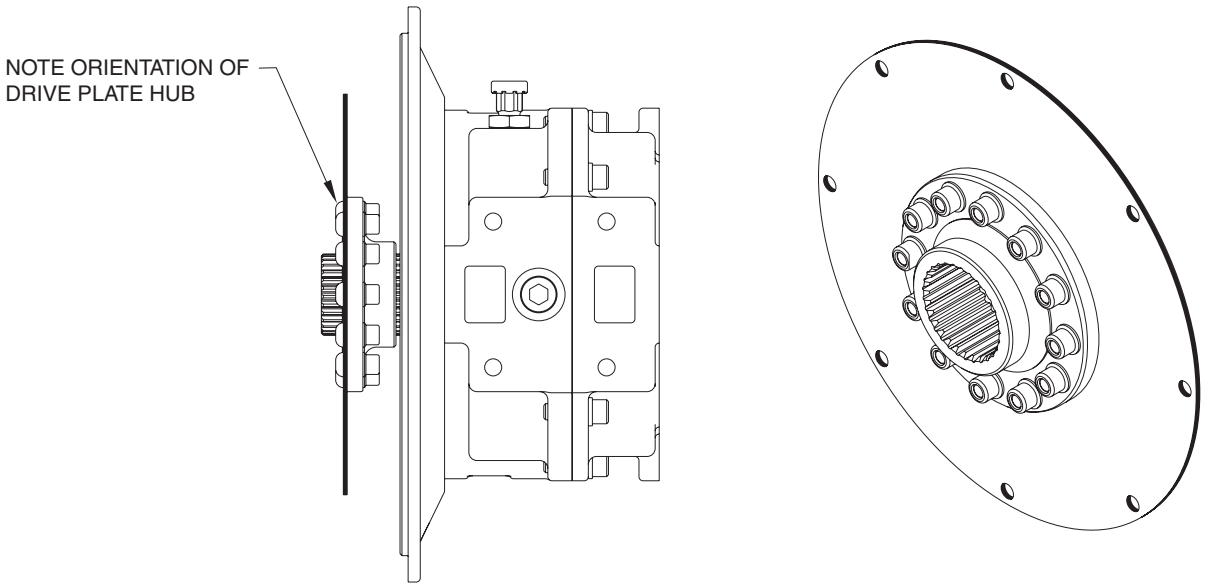
1) Place clutch housing or engine adapter onto pump drive gear box. Be sure that clutch housing or engine adapter is positioned correctly as this will locate the weep hole at the bottom and allow moisture to drain.

2) Install lock washers on to adapter mounting cap screws. Evenly tighten bolts according to Table 1 (see page 33).

DRIVE PLATE OPTIONS

The following chart lists all available drive plate options for the Durst pump drives. Drive plates are to be purchased as complete kits only.

Drive Plate Assembly	SAE Drive Plate Size	Drive Plate Offset	Tapped Engine Flywheel Holes
X12145	14	1.00	(8) 1/2-13
X12146	11.5	1.562	(8) 3/8-16
X12147	10	2.125	(8) 3/8-16
X12148	8	2.438	(6) 3/8-16



DRIVE PLATE INSTALLATION INSTRUCTIONS

1) Remove the drive plate from the Durst pump drive gear box.

2) Install the drive plate onto the engine flywheel, drive plate hub is to face AWAY from the engine. Bolt the drive plate to the engine flywheel, tighten bolts according to Table 1 (see page 33).

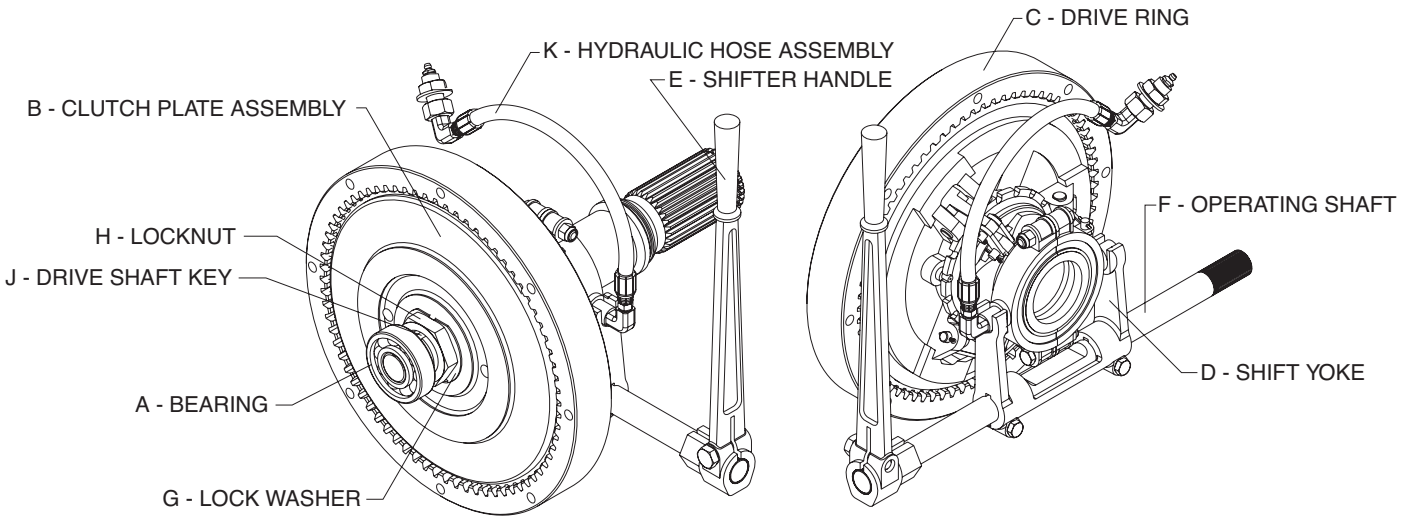
3) Check drive plate run out. Total TIR should not exceed 0.008".

4) Apply Silver Streak #200S to the external splines and slide the input shaft of the pump drive into the drive plate hub until the engine adapter seats against the engine flywheel housing.

CAUTION Do not use the engine adapter mounting bolts to seat the pump drive engine adapter housing to the engine flywheel housing. This may reduce engine crankshaft endplay and will result in premature damage or failure of crankshaft bearings.

CAUTION Always check engine crankshaft endplay after installing the flex plate to engine flywheel. Refer to engine manufacturer's endplay specifications.

CLUTCH OPTIONS



The following chart lists all available clutch options for the Durst pump drives. Clutch kits can be either purchased as complete kits or as individual components.

Component Description	Complete Clutch Housing Kit Part Numbers				
	K12288	K12289	K12290	K12291	K12292
SAE Clutch Size	SP214	SP214	SP211	C111	C110
Clutch Face Offset	1.00	1.00	1.562	1.562	2.125
Tapped Flywheel Holes	(8) 1/2-13	(8) 1/2-13	(8) 3/8-16	(8) 3/8-16	(6) 3/8-16
A – Bearing	☆4202-129	◆C2059	4202-101	4202-101	4202-101
B – Clutch Plate Assy.	4263-109	4263-109	4263-106	4263-105	4263-107
C – Drive Ring	4265-627	4265-627	4265-618	4265-619	4265-620
D – Shift Yoke	4265-634	4265-634	4265-612	4265-614	4265-614
E – Shift Handle	4265-633	4265-633	4265-613	4265-613	4265-613
F – Operating Shaft	4265-632	4265-632	4265-616	4265-615	4265-615
G – Lock Washer	4265-631	4265-631	4265-621	4265-622	4265-622
H – Lock Nut	4265-629	4265-629	4265-624	4265-623	4265-623
J – Drive Shaft Key	4273-921	4273-921	4273-409	4273-132	4273-132
K – Hydraulic Hose Assy.	4265-635	4265-635	4265-635	4265-617	4265-617

☆ 3.15 diameter pilot bearing.

◆ 3.94 diameter pilot bearing.

Note: In addition to parts listed in chart above, all kits include (2) woodruff keys, P/N 4273-507, (2) lube fittings, P/N 4400-128, and (1) zerk fitting, P/N K44.

CLUTCH INSTALLATION INSTRUCTIONS

1) Before assembling the clutch onto the Durst pump drive, position the pump drive with the input facing up. Note: The clutch housing and clutch shaft must be in place and secured (see pages 28-29).

2) Install the operating shaft into the clutch housing and shift yoke. The shift handle can be mounted on either side of the operating shaft. Tighten bolt according to Table 1 (see page 33).

Tip: Applying a light coat of oil will allow the shaft to slide into place easier.

3) Slide the shift yoke out of place and set the 4273-507 woodruffs keys into the slot on the operating shaft.

4) Move the shift yoke into place, over the woodruff keys. Shift yoke MUST be centered on the operating shaft. Tighten bolts according to Table 1 (page 33).

5) Position the clutch over the clutch housing, and install the grease hose to the clutch assembly grease port.

6) Carefully lower the clutch onto the clutch shaft and into the clutch housing. Using the shift handle, align the shift yoke with the mating tabs on the clutch assembly.

7) With the clutch installed press in the drive shaft key.

8) Place the lock washer onto the clutch shaft so that the alignment tab is setting in the clutch keyway.

9) Thread the lock nut onto the clutch shaft and tighten to 30 ft.-lbs. To tighten nut, turn an additional:

A) For SP214 and SP114 clutches: 150-180 Degrees.

B) For SP211 clutch: 120-150 Degrees.

C) For C111 and C110 clutches: 60-90 Degrees.

10) Fold over the two edges of the lock washer to the flats of the lock nut.

11) Press on support bearing to the end of the clutch shaft.

CAUTION Do not use excessive force when pressing on the support bearing, as this could damage the internal gearbox bearings and cause premature failure.

GENERAL INFORMATION

TOOLS NEEDED

- ✓ Sockets: 3/4", 5/8", 15/16", 1-1/8", 2-3/8"
- ✓ Allen Wrench: 3/8", 1/2"
- ✓ Eye Bolts: 5/8", 3/4"
- ✓ Gear Pullers (5.625" diameter min.)
- ✓ Scraper Blade
- ✓ Loctite 587, 609 or equivalent
- ✓ Wooden Mallet
- ✓ Expansion Plug Remover
- ✓ Snap Ring Pliers
- ✓ Torque Wrench
- ✓ Large Flat Head Punch
- ✓ Adjustable Open-end Wrench
- ✓ Large Screw Driver
- ✓ Seal Driver

DEFINITIONS

Warning: Means that there is a possibility of personal injury to yourself or to others.

Caution: Means that there is a possibility of damaging the gearbox or engine it is attached to.

Note: Provides general information.

Tip: Provides information that can help properly complete a specific procedure.

SAE: Society of Automotive Engineers. This group defines standards in the automotive industry to allow for interchangeability between engine and component manufacturers.

Iso-Lube: Ports located in Terrell pump pads to provide adequate oil lubrication to the pump splines.

TIR: Total Indicator Reading. This is a measurement to determine endplay on a rotating element.

Increaser Ratio: When the output gears/shafts are turning faster than the input shaft.

Decreaser Ratio: When the output gears/shafts are turning slower than the input shaft.

TABLE 1

Bolt Tightening Torques		
	Torque (ft-lb)	
Size	Gr. 5	Gr. 8
3/8-16	30	45
7/16-14	50	70
1/2-13	75	105
5/8-11	150	210
3/4-10	270	375

Plug Tightening Torques	
Size	Torque (ft-lb)
Fill, Drain & Vent Plugs	50

DURST PUMP DRIVE WARRANTY

WARRANTIES & LIMITATIONS OF LIABILITY. (a) Seller warrants to Buyer that the goods will conform to the following warranty. The goods will be commercially free from defects in materials and workmanship under normal use for a period of 1 year from the date of shipment of the goods by Seller and will conform at the date of shipment to applicable specifications, drawings and blueprints, except for departures therefrom with written approval of Buyer; provided that work performed by Seller upon blanks and other materials furnished by Buyer is excluded from this warranty. Seller shall have no liability to Buyer for cost of blanks furnished by Buyer which are damaged or spoiled during heat treat or machining operations.

(b) In the case of drives, gears and reducers manufactured by Seller, Seller warrants only that such products, when shipped, shall be capable of delivering the service rating as indicated in Seller's written documents, including quotations and catalogs as noted on such products, providing such equipment is properly installed and maintained, correctly lubricated, operating under normal conditions with competent supervision, and within the load limits for which it was sold, and provided further that the equipment is free from critical speed, tortional or other type vibration, no matter how induced.

(c) If any model or sample was provided to the Buyer, it was used merely to illustrate the general type and quality of goods and not to warrant that goods shipped would be of that type or quality.

(d) UNLESS AUTHORIZED IN WRITING BY A CORPORATE OFFICER OR VICE PRESIDENT, NO AGENT, EMPLOYEE OR REPRESENTATIVE OF SELLER HAS ANY AUTHORITY TO BIND SELLER TO ANY AFFIRMATION, REPRESENTATION OR WARRANTY CONCERNING THE GOODS SOLD UNDER THE SALES CONTRACT AND ANY SUCH AFFIRMATION, REPRESENTATION OR WARRANTY HAS NOT FORMED A PART OF THE BASIS OF THE BARGAIN AND SHALL BE UNENFORCEABLE.

(e) Seller's sole obligation under the foregoing warranties is limited to either, at Seller's option, replacing or repairing defective goods (or defective parts thereof). This warranty does not cover the cost of installation of the new or repaired goods or parts. Replacement goods or parts are warranted for the remainder of the warranty period applicable to the goods originally supplied by Seller. All claims for allegedly defective goods must be made within 10 days after Buyer learns of such alleged defects. All claims not made in writing and received by Seller within such 10 day period shall be deemed waived. Buyer shall return a sample of the alleged defective part for Seller's inspection and no other goods shall be returned to Seller within Seller's written consent. This warranty shall not extend to goods subjected to misuse, abuse, neglect, accident or improper installation or maintenance, incorrect lubrication, or goods which have been altered or repaired by anyone other than Seller or its authorized representative.

(f) THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND/OR ANY OTHER TYPE, WHETHER EXPRESS OR IMPLIED.

(g) Products not manufactured and work not performed by Seller are warranted only to the extent and in the manner that the same are warranted to Seller by Seller's vendors, and then only to the extent that Seller is reasonably able to enforce such warranty. In enforcing such warranty, it is understood Seller shall have no obligation to initiate litigation unless Buyer undertakes to pay all costs and expenses therefore, including but not limited to Attorney's fees, and indemnifies Seller against any liability to Seller's vendors arising out of such litigation;

(h) THE FOREGOING IS SELLER'S ONLY OBLIGATION AND BUYER'S EXCLUSIVE REMEDY FOR BREACH OF WARRANTY. BUYER'S FAILURE TO SUBMIT A CLAIM AS PROVIDED ABOVE SHALL SPECIFICALLY WAIVE ALL CLAIMS FOR DAMAGES OR OTHER RELIEF INCLUDING BUT NOT LIMITED TO CLAIMS BASED ON LATENT DEFECTS. IN NO EVENT SHALL BUYER BE ENTITLED TO INCIDENTAL, CONSEQUENTIAL, CONTINGENT, OR SPECIAL DAMAGES, NOR SHALL SELLER'S LIABILITY EXCEED THE PURCHASE PRICE OF THE GOODS. EVEN IF THE REPAIR OR REPLACEMENT REMEDY SHALL BE DEEMED TO HAVE FAILED OF ITS ESSENTIAL PURPOSE UNDER SECTION 2-719 OF THE UNIFORM COMMERCIAL CODE, SELLER SHALL HAVE NO LIABILITY TO BUYER FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, SUCH AS LOST PROFITS, LOST REVENUE, DAMAGE TO OTHER EQUIPMENT OR LIABILITY OR INJURY TO A THIRD PARTY. ANY ACTION ARISING HEREUNDER OR RELATED HERETO MUST BE COMMENCED WITHIN ONE (1) YEAR AFTER THE CAUSE OF ACTION OCCURS, OR IT SHALL BE BARRED, NOTWITHSTANDING ANY STATUTORY PERIOD OF LIMITATIONS TO THE CONTRARY; AND

(i) In the event of the resale of any of the goods, in whatever form, Buyer will include the following language in a conspicuous place and in a conspicuous manner in a written agreement covering such resale: "THE MANUFACTURER MAKES NO WARRANTIES OR REPRESENTATIONS, EXPRESS OR IMPLIED, BY OPERATION OF LAW OR OTHERWISE, AS TO THE MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE GOODS SOLD HEREUNDER. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE GOODS PURCHASED HEREUNDER WILL SUITABLY MEET THE REQUIREMENTS OR THEIR INTENDED USE. IN NO EVENT WILL MANUFACTURER BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL OR OTHER DAMAGES."

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